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# PATHOLOGICAL FINDINGS IN THE SYMPATHETIC NERVOUS SYSTEM IN THE PSYCHOSES.[1]

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In contrast with the immense importance ascribed to the sympathetic nervous system and the unremitting study it has received on the part of physiologists, neurologists and clinicians, is the attention that it has received on the part of pathologists. Except for the work done in Addison's disease, the literature contains but a very few scattered pathological studies of the subject. Compared with what has been done by the neuropathologists on the central nervous system, that done on the sympathetic sinks into complete and astonishing insignificance.

## 1. SOME OF THE MORE IMPORTANT LITERATURE.

One of the most quoted as well as one of the earliest pathological studies was that by Hale White (16). Working entirely on material from non-insane patients, White found that the semilunar and the superior cervical ganglia quite regularly presented changes of marked character. Pigmentation that went on to the destruction or disintegration of the cell, disappearance of the nucleus, absence of the nerve processes, appearance of leucocytes without regard to pathological processes, increased connective tissue—these he records as occurring in most cases after early adult life. They were not present in ganglia of children. As a result of his pathological studies and of a study of the sympathetic ganglia in

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animals, White came to the following conclusions: First, the changes above described, occurring in the semilunar and the superior cervical sympathetic ganglia, are *not pathological,* but represent a *normal change* occurring in the life history of the ganglia. When such changes occur in the thoracic ganglia they are of some pathological importance. When they occur in the Gasserian ganglion (used as a control), in the cardiac and lenticular ganglia, they are of great pathological importance, representing then a disease process. Second, studies in animals convinced him that the semilunar ganglion, as well as the superior cervical, is a *recessive organ, one which tends to disappear as one goes higher in the animal scale, and without function in the adult human.* It has function in the child and, therefore, may be compared, on the ground of life history, with the thymus. On the other hand, the lenticular, cardiac and Gasserian ganglia are of decided importance because they functionate in the adult, and changes occurring in them are of pathological importance. Somewhere between these two series of ganglia are the thoracic ganglia of the sympathetic, which in part are recessive and in part functional.

It is important to note that this view is absolutely opposed to the belief that the semilunar ganglion is a *very active nervous organ* having the closest relationship with the condition of the abdominal and pelvic viscera, entertained by the later physiologists, neurologists and clinicians. (Langley, Eppinger and Hess (4); Higier (5).) Moreover, the biological studies of White are distinctly contradicted by the researches of His, Junior, and especially by the work of Kuntz (6). According to the latter, the semilunar ganglion is a *late* organ, one that is phylogenetically younger than the central nervous system, younger than the peripheral ganglia of which it is an outgrowth. The higher up in the animal scale, the more this prevertebral system comes into play. Consequently, it is by no means a recessive organ, but, on the other hand, is an *arriving* organ.

It is pertinent to state here that some facts which are the result of personal research contradicts White's views. For example, in the semilunar sympathetic in old people one finds cells with very good cell processes (Fig. 1, Plate V). Moreover, acute cell changes of a type occurring only in functioning cells occur in the

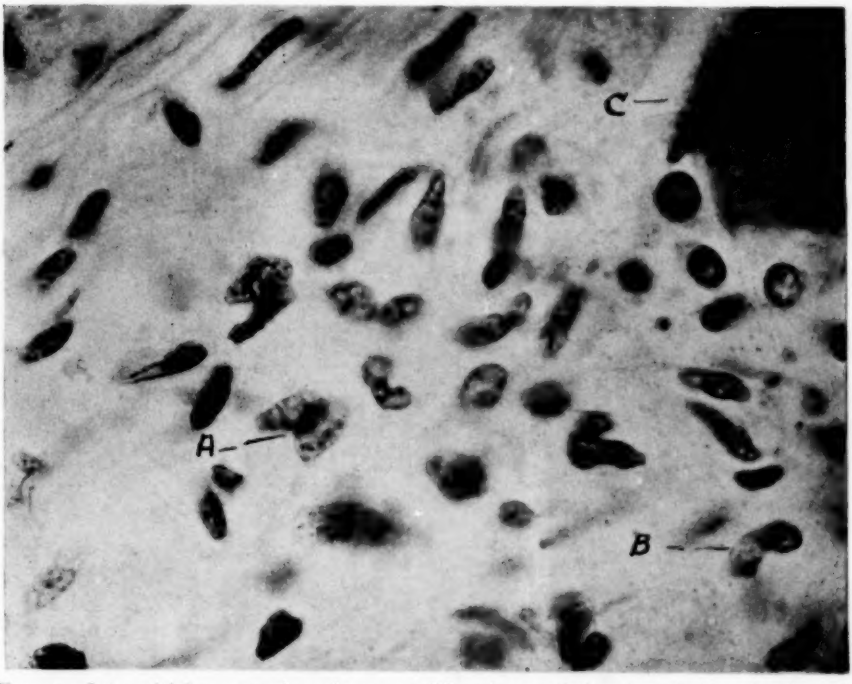


FIG. 1.—Interstitial connective tissue proliferating. Cells *A* and *B*, mitosis. *C*, nerve cell. × 1000. E. M. Blue.

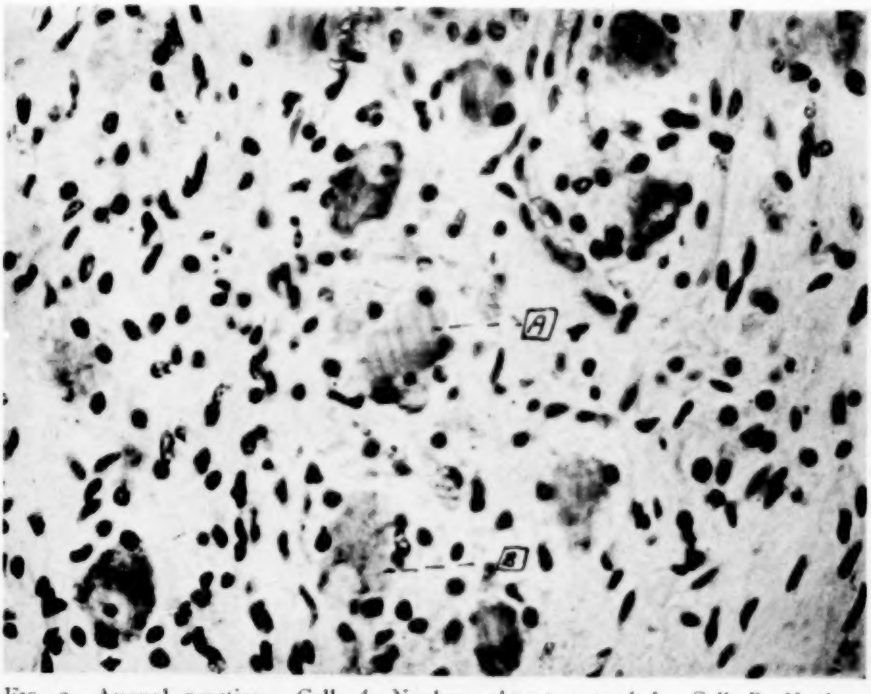


FIG. 2.—Axonal reaction. Cell *A*—Nucleus almost extruded. Cell *B*—Nucleus peripheral. × 340. Cresyl Violet.

sympathetic ganglia of old people (Fig. 2, Plate III, cells A and B).

Vas (15), somewhat later, believed that the excessive pigmentation found in the sympathetic was not entirely pathological and in a large part represents the normal evolution of the nerve cell.

With both of the above opinions, that is, those of White and of Vas, Lugaro (11) is in disagreement. Conceding that pigmentation is a process of old age, its *excess* as found in cachexia and in other conditions indicates *excessive senility, true disordered function.* For Lugaro, the frequent finding of excessive pigmentation, cell destruction, nuclear changes and connective tissue increase in old age can be correlated with the physical disturbances of that time of life. He concludes that the superior cervical ganglion and the semilunar are *earliest* of all the sympathetic ganglia *to become aged.* It will thus be seen that of the two conclusions possible concerning these changes, which are, first, that it is a normal evolution, and, second, that it is an early senility, White has taken the one view and Lugaro the other.

Orth (14) finds increased pigment, atrophy of cells and a disappearance of the nucleus in cachexia and extreme old age.

Most of the other writers on the sympathetic, as studied from a pathologists's point of view, have paid their attention to the cells found in the intestine and heart. Thus Blaschko (1), working in enteritis, finds acute cell changes in Auerbach's plexus and suggests that diarrhœa accompanying enteritis is a nervous phenomenon. The researches of Leupold (9) substantiate a similar conclusion. Cotton and Southard (3) find axonal reaction changes in a case of mental disease in which this reaction was found widely spread throughout the central nervous system, thus making up the pathological entity called central neuritis by Adolf Meyer. Of great importance are the degenerative changes recorded by Lissauer (10) as occurring in the heart ganglionic cells after acute and chronic alcohol and chloroform poisoning, as well as through disease.

The views of Y. Manquelian (12) are of decided interest. On the ground that he has demonstrated sympathetic nervous cells in the aorta and in many of the organs, he believes that the interpretation of bodily symptoms without reckoning the peripheral nervous system is vitiated by the omission. Glandular activities and

disease processes are affected by and affect the nerve cells scattered throughout the body.

## 2. Personal Studies.

The material examined was in part obtained from 50 consecutive autopsies performed at the Taunton State Hospital during the past year. In the main, only the semilunar ganglia were studied, usually from formalin, zenker, and alcohol fixed material. The stains mostly used were eosin-methylene blue, Van Gieson, toluidin blue and cresyl violette, Bielschowsky and scharlach R. In addition to the above material, 40 sets of slides from as many cases autopsied at Worcester State Hospital during 1903 and 1904 were restained in the eosin-methylene blue and examined. Furthermore, certain animal material was sectioned, and results will be here recorded.

It is not my intention to describe every variety of change found. Certain outstanding and peculiar variations will be considered, not in relation to mental syndromes, for no such relationship can at present be even considered, but in wider relationships.

1. *Brief Description of the Normal Semilunar Ganglion Cell.*— It is a multipolar cells with a large, slightly eccentric nucleus of ordinary structure. The Nissl granules are not so distinct as, for example, in the Gasserion ganglion or in the motor cells of the cord, but they are readily demonstrable and are not peculiar. The cell is smaller than the Gasserian ganglion cell, but is like it and all peripheral cells in that it lies in a capsule lined by endothelial cells. These cells have the usual satellite functions and line each process of the cell as well as its body.

Cells having a double nucleus are comparatively common in the semilunar ganglion. The meaning of such cells is debatable in other parts of the nervous system, but in the semilunar ganglion it is undoubtedly normal, and in certain species of animals (the rabbit, the guinea-pig) it is extremely common. In man, such cells differ in no other fundamentals from their neighbors. Both in man and the animals the double nucleated cells are not found in the intestine or other peripheral organs.

A peculiar phenomenon which is here mentioned, perhaps irrelevantly, is the occurrence, though very uncommonly, of cells having double nucleoli. These double nucleoli have almost, though not

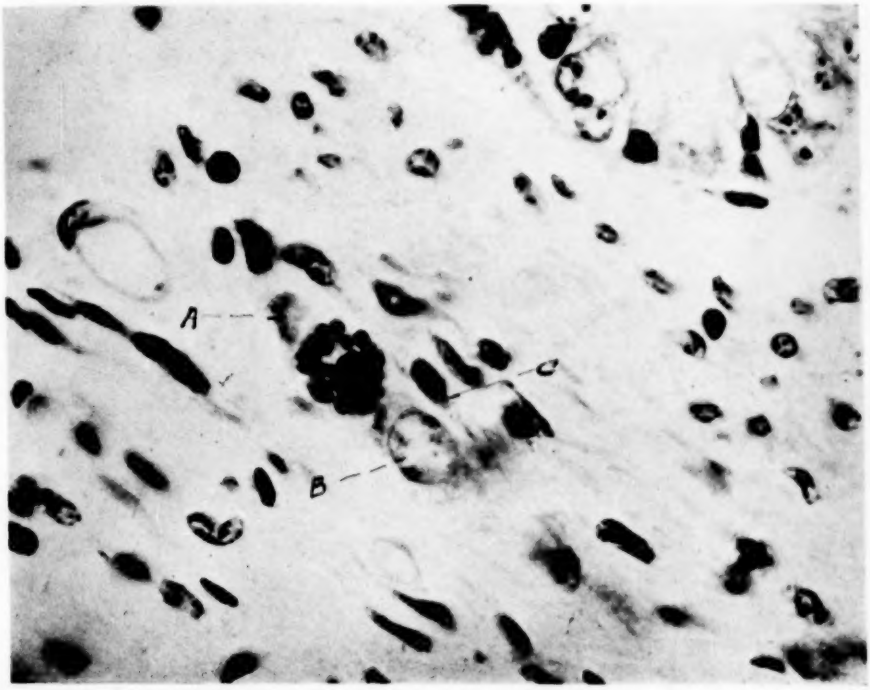


FIG. 1.—Intestine of bull; tubercular enteritis. Cell *A*—Nerve cell, in Meissner's plexus showing large oxyphilic granules. Cell *B*—Swollen nucleus, nerve cell, with two nucleoli. Cell C—Eosinophile. × 1000. E. M. Blue.

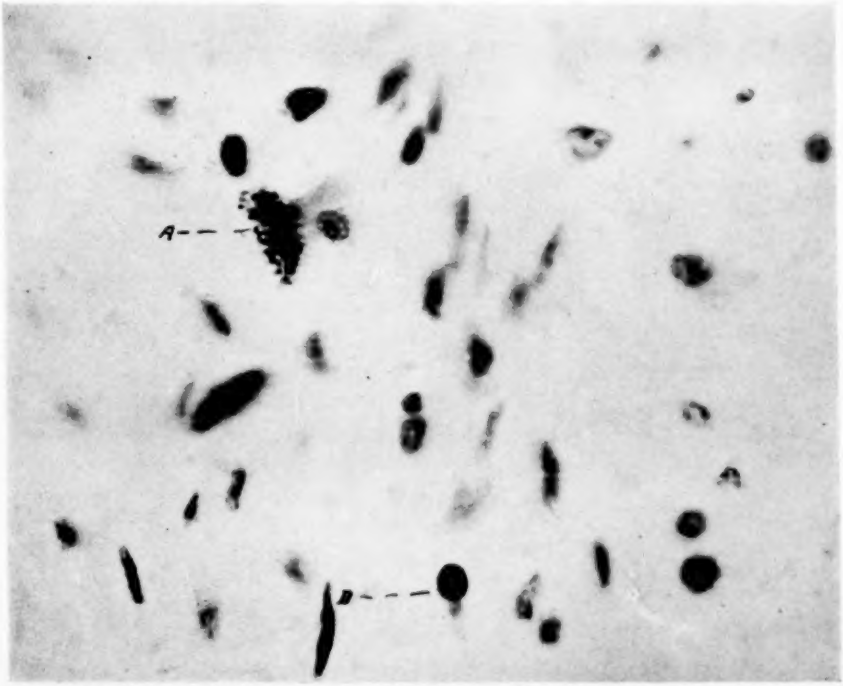


FIG. 2.—Interstitial connective tissue of ganglion. Cell *A*—Eosinophilic reaction cell, with large granules. Cell *B*—Eosinophilic reaction cell, small granules, plasma cell nucleus. × 1000. E. M. Blue.

quite, the appearance of mitosis. Double nucleoli are fairly common in the sympathetic ganglion cells of certain animals; for example, rabbit, guinea-pig and, by personal observation, in the intestine of a bull (Fig. 1, Plate IV, cell B). Whether it is pathological in man, I cannot say. It was found only in a few cells of a young epileptic and in a senile dementia case, a man, aged 95.

2. *Axonal Reaction.*—So far as I know, this has not previously been described in the cells of the semilunar ganglion. Here, as elsewhere, there is a displacement of the nucleus to the periphery, a swelling of the body with central chromatolysis, and in some cases the nucleus is extruded. The meaning of this phenomenon is well established and relates to an acute disorder, which may or may not arise through injury or irritation of the axon. This


FIG. 1.—Showing emigration of nucleolus. *A*—Eccentric nucleolus. *B*—Further stage. *C*—Nucleolus, entirely out. *D*—Cell without nucleolus.

phenomenon occurring in isolated cells in very many cases was particularly prominent in five (Fig. 2, Plate III).

(a) An acute exhaustion psychosis in a woman of 50 without acute infection and terminating in death owing to failure of compensation of the heart, of which the mitral valve was chronically diseased.

(b) Three cases of enteritis ending in death. In these cases, occurring twice in senile dementia and once in general paresis, the axonal reaction was very prominent in cells scattered throughout the ganglia.

(c) One case of senile dementia, more properly a psychosis due to failure of compensation and cerebral arteriosclerosis in a male, aged 68, who died of pulmonary tuberculosis; tubercular glands of peritoneum—no tuberculosis of sympathetic. Very decided axonal reaction throughout the ganglia together with much more chronic changes later described.

3. *Emigration of the Nucleolus.*—This rare change, probably acute in character, is here described, I believe, for the first time. As the name indicates, the nucleolus leaves the cell to disappear into the interstitial tissues. Eccentricity of the nucleolus is not uncommon. The meaning of this phenomena is unknown. It was prominent in a senile dementia case, man of 95 years of age (Fig. 1).

4. *Neurathrepsia.*—This term is here used to cover a very large number of changes of a chronic type which lead to the destruction of the cell. It was first used by Levaditti (7, 8), and is in contrast with the term *neuronphagia,* which, properly used, means the "eating up" of the nerve cells by phagocyte and satellite cells as seen in anterior poliomyelitis and rabies. In neurathrepsia, owing to defective metabolism, there is progressive change in the nerve cells with or without corresponding increase in the satellite cells. As Van Gehuchten pointed out years ago, if degenerative changes are slow, satellite cells do not multiply. If the changes are rapid they do multiply.

(a) Pigmentation (Type No. 1). The usual lipochrome is common in the sympathetic. It appears early, frequently starts around the nucleus and in the sympathetic is very often excessive to the point where no cell structure can be made out and where masses of pigment only can be seen. In such cells, by Bielschowsky's neurofibril method, the cell processes are diffcult to make out and the fibrils cannot be distinguished. In cachexia, and especially (as it seems to me) where the intestinal atrophy is marked, the largest part of the cells present have no nuclei, and are represented by irregular groups of pigment without cellular structure (Fig. 2, Plate V).

(Type No. 2.) Oxyphilic granules, that is, granules which take the acid stains, such as the eosin-methylene blue, are prominent in the process here described. These granules, called oxyneutrophylic by Marinesco, are frequently found together with the lipochrome and independently of it. The granules are very often very fine and scattered, and on the other hand are seen as large granules which are quite compactly arranged. These granules are much more common in the prevertebral than in the central nervous system, and occur more frequently in the semilunar than in the Gasserian ganglion. They represent undoubtedly pathological

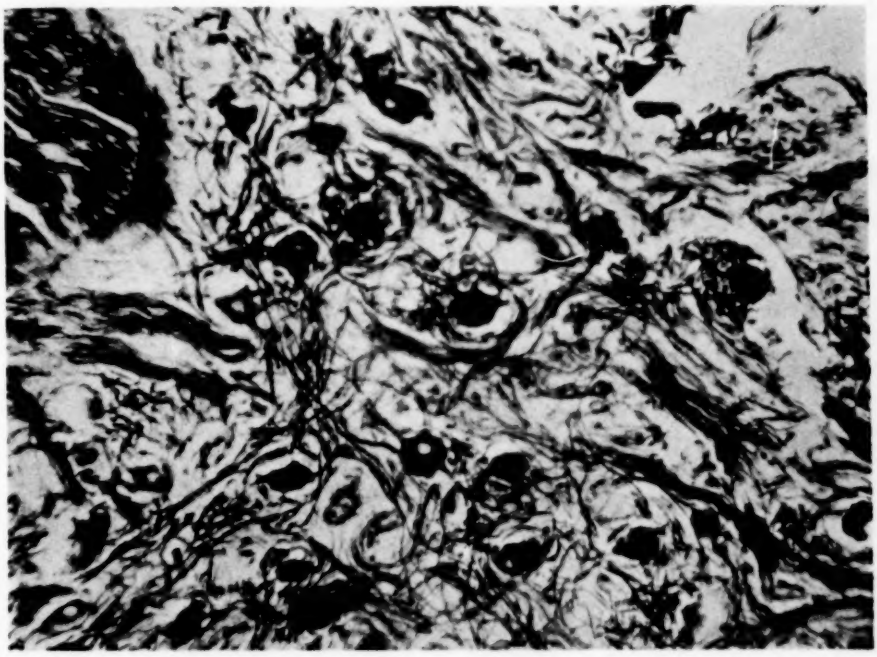

FIG. 1.—Showing multipolar cells. × 140. Bielschowsky.

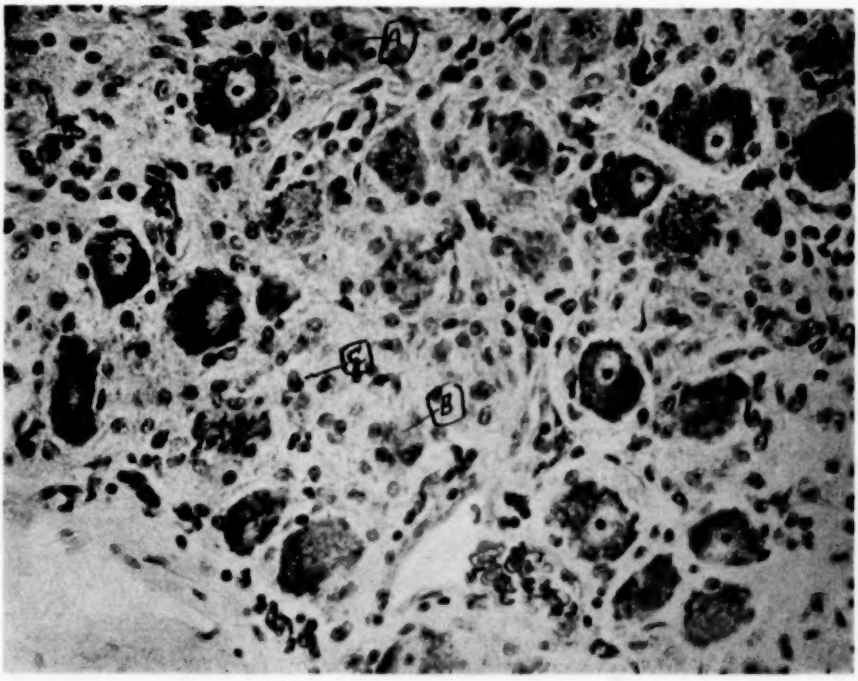


FIG. 2.—Cells *A*, *B* and *C* showing disintegration and replacement. Ep. dementia; 75 years. × 350.

changes of a chronic kind. It is certain, however, that they also occur in more acute conditions. In a young bull suffering from tubercular enteritis certain cells of Meissner's plexus in the intestines show this change in decided manner (Fig. 1, Plate IV).

5. *Nuclear Changes.*—These are exceedingly common in this condition. Viewed from the technical standpoint they consist in a gradually increasing affinity for acid dyes, so that while the normal nucleus is unstained in eosin-methylene blue preparations, the abnormal in the final stage may be of a deep red. Morphologically, the nucleus presents first an irregular border and then

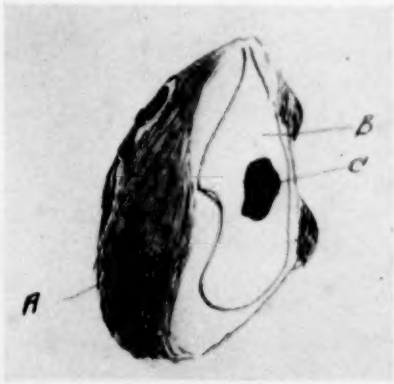


FIG. 2.—Showing shrinking of nerve cell and intra-capsular homogeneous red-staining mass (epileptic dementia). *A*—Intracapsular mass. *B*—Shrunken nerve cell. *C*—Nucleus, presenting hyperchromatia.

becomes more and more shrunken until in extreme cases it has a half-moon shape. Filamentous change of the nucleoplasm is part of the process. Finally, it must again be mentioned that in marked pigmented neurothrepsia the nucleus disappears from the cell structure. This, however, is not so common as most of the writers seem to think, and it is possible that they may have been misled by the fact that the irregular arrangement of the sympathetic ganglion cells lends itself to deceptive planes of section in which no nuclei can be found.

6. *Capsular changes.*—In the old, where the degenerative changes progress to a marked extent, one of the most apparent

phenomena is the irregular relation between the capsular nuclei and the nerve cells (Fig. 2, Plate V). In the young, this arrangement is very regular. In the old, the capsular nuclei are increased, swollen, and overlie the nerve cell. Where the cell is completely destroyed there is usually a definite increase of capsular cells. This multiplication of satellite cells is not so marked, in my opinion, as the corresponding neurogliar increase under similar circumstances in the central nervous system.

In certain old cases, especially marked in a case of epileptic dementia in a man 75 years of age, the nerve cells are decidedly irregular and shrunken in appearance. Under favorable circumstances this is found to be the result of a homogeneous red staining mass which appears in the capsule and, gradually encroaching on the cell, causes an atrophy by pressure (Fig. 2). I have not found this change in the Gasserian ganglion.

7. *The interstitial connective tissue* (Fig. 1, Plate III) shows an increase, as might be expected. One very curious feature of the semilunar ganglion is the almost complete absence of true, inflammatory reaction processes. Plasma cells, even in general paresis, are practically never seen and the entire lymphocytic and leucocytic series are conspicuously absent. This in despite of the fact that the ganglia are *surrounded by* and *interspersed with* very small but very active lymph glands of a curious kind in which all manner of cells are found. The paucity of inflammatory reaction is in decided contrast with the condition of two related structures. First, the central nervous system and the Gasserian ganglion, in which such changes are very common, and, second, the adrenal gland, in which lymphocytes, plasma cells, etc., are more often found, perhaps, than in any other non-lymphatic structure of the body.

Scattered through the ganglion, however, are occasional eosinophylic cells of the type found in inflammations. These cells are of two kinds; one with coarse granules (Fig. 2, Plate IV), the other with a nucleus like a plasma cell and a finely granular body. This last type is similar to cells found in the aforementioned lymph glands.

A very suggestive finding is to be recorded in the eosinophilic cells found in an intestine of a young bull killed because of tubercular enteritis. In this case there were many eosinophilic cells, as is normal for this species of animal, and, besides, many plasmas,

etc., because of the tubercular inflammatory process. *The curious thing was that the eosinophilic cells seemed actively phagocytic for the injured nerve cells, and selectively so* (Fig. 1, Plate IV). Since the eosinophiles have never before been seen to be phagocytes, this observation is important.

To summarize the above findings. First, the semilunar ganglion is apparently often acutely injured in general infections and in enteritis, as is shown by the presence of the axonal reaction and other changes above described. Second, the semilunar ganglion is the seat of degenerative processes to an extent probably greater than cord, brain or Gasserian ganglion. These degenerative changes are here designated under the general term neurothrepsia (Levaditti). It is probable that these changes represent an early and marked senility, and in this I am in accord with Lugaro. Third, there is a decided absence of marked reactive changes (lymphocytes, plasma cells, etc.), such as are prominent in the central nervous system, Gasserian ganglion, and the related organ or adrenal. Even in general paresis these are absent. Fourth, there is a curious, though not prominent, increase of eosinophilic connective tissue cells which, in the case of the bovine tubercular enteritis here cited, seemed to have a phagocytic attraction for injured nerve cells.

It is to be emphasized that the above findings apply, in my experience, only to the psychoses.

*Conclusions.*—Two prominent conclusions stand out as worthy of emphasis. First, the semilunar and other sympathetic ganglia and the autonomic ganglia merit the close attention of pathologists. The part the vascular and glandular system under their control plays in all the great vital processes as well as in the creation and modification of the emotions, indicates that a more comprehensive and systematic study may throw light on the problems of old age as well as on the psychoses. Regarding the latter, it may be stated that quantitatively greater changes in the cases of insane people may well have a value equivalent to qualitative changes, since in many of the psychoses the evolution of the disease is from temperament to insanity. Second, the interpretation of morbid phenomena needs to take into account the presence of nerve cells in the organs, such as the aorta, the heart, the intestines, stomach, genitalia, etc. Symptoms may well arise because

of injury to these peripheral cells either as an antecedent, or as a consequent, of the disease process. We have, as recent experiments show, drugs that have a peculiar and selective power on the nerve cells of the autonomic and sympathetic systems. These should be experimentally as well as therapeutically used in conditions where the symptoms are even in part vasomotor and glandular.

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# THE WASSERMANN TEST IN PRACTICAL PSYCHIATRY.

## An Analysis of the Results of the Test on 1600 Admissions to Danvers State Hospital.

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### INTRODUCTION.

This paper is in no sense a critique of the Wassermann test as a biological reaction, but is the expression of the practical results of the use of the test in the routine examination of mental cases admitted to this hospital. So far as I am aware, the reports upon the use of this test among the insane which have so far appeared have dealt, to a large extent at least, with groups of selected cases. This is true of Plaut's[1] monograph, and of such other reports as have come to my attention. Southard[2] has written upon the statistics of 6000 tests, but this has very little to do with the use of the results of the test in diagnosis within the institution.

The Wassermann test was first used in selected cases in this hospital in 1910, and in May, 1912, it became a part of the routine examination of all patients admitted. Of 1714 admissions since that time, the test has been performed upon the blood serum of 1600. In 276 cases, the spinal fluid has also been tested. This series of tests—in which there are no selected cases—forms the basis of this paper.

### METHODS.

The method of performing the test has varied somewhat from time to time. All tests were performed in the testing laboratory of the Department of Diseases of the Nervous System at the

Harvard Medical School (now the Wassermann Laboratory of the State Board of Health) and the following summary of the method was supplied by the director:

Three antigens are used—two from human heart reinforced with cholesterin and an alcoholic extract of syphilitic fetal liver. Five cc. of a 5 per cent suspension of washed sheep corpuscles to each tube. Anti-sheep ambocepter, tested daily, 2 units. Complement (10 per cent guinea-pig's serum) 2 units. Patient's serum, inactivated at 56°, 0.1 cc. with each antigen. Ambocepter and complement unit titrated daily. Controls of complement, ambocepter and salt solution for hemolytic power. Strong positive, slight positive and negative control sera: each antigen doubled in amount. Period for fixing complement, 1 hour. Doubtful cases repeated with double amount of serum and appropriate controls. Cerebro-spinal fluid used in five times the amount of sera.

The attempt is made to secure a specimen of blood from each patient admitted. These are kept in the refrigerator over night, and sent to the testing laboratory early the following day. They have always kept in good condition.

## ANALYSIS OF RESULTS.

The results of the tests on the blood serum are summarized in the following table:

TABLE I.—RESULTS OF BLOOD TESTS.

| | Male. | | Female. | | Total. | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Cases tested ..... | 864 | ..... | 736 | ..... | 1600 | ..... |
| Wassermann positive .... | 164 | 18.98 | 92 | 12.50 | 256 | 16.00 |
| Wassermann doubtful... | 37 | 4.28 | 25 | 3.39 | 62 | 3.87 |
| Wassermann negative.... | 663 | 76.74 | 619 | 84.11 | 1282 | 80.13 |

The table is subject to further analysis. Thus, many more doubtful reactions have been obtained than appear in the doubtful group in the table. Where a decisive reaction was obtained in a later test, the case was transferred to that group. Hence, those here reported as doubtful are those in which repeated tests were doubtful, or those in which a second test was not done. Unfortunately, a number of the originally doubtful tests were not repeated.

Three cases with conflicting reports have been included in the positive group. Two of these had first positive and then negative, and one positive, doubtful and negative tests. In this series there have been only a very small number of reversals of the reaction, but this is explained by the fact that only a few cases have had repeated tests. It is, of course, true that a single negative reaction does not exclude syphilis, nor, according to the later work on repeated tests, does a single positive reaction constitute indisputable evidence for infection. These criticisms, however, do not materially affect the conclusions to be drawn from the data presented.

In addition to the 256 cases with positive blood test, shown in the table, there are 17 cases (13 male and 4 female) with positive test in the spinal fluid, despite negative (12) or doubtful (5) blood test. (In only one of these cases, twice doubtful, was the blood test repeated.) This gives us 273 cases, or 17.0 per cent of 1600 admissions with a positive test in one or other body fluid.

At this point we may consider the significance of a "doubtful" test. This term is applied to cases giving a positive test with the more delicate antigen, and a negative test with the less delicate antigen. According to some, this also means syphilis. From a statistical point of view, this is not true. Of our group of cases, second and occasionally third tests have been performed in 43 cases where the first test was doubtful. Of these repeated tests, nine (20.9 per cent) were doubtful; five (11.6 per cent) were positive, and 29 (67.5 per cent) were negative. To the positive cases in the above group we may add the five cases with positive test in the spinal fluid and doubtful in the blood, but even then we find not more than one-quarter of the cases eventually showing positive tests after a primary doubtful test. It would certainly seem from this that a doubtful test by no means indicates syphilitic infection. *A doubtful test is, however, of sufficient importance to demand repetition or even examination of the spinal fluid* (which has not been done in all of our cases).

## CLINICAL DIAGNOSES OF CASES WITH POSITIVE TESTS.

Table II gives for the sexes individually and together the clinical distribution of the cases with positive blood tests.

TABLE II.—CLINICAL DIAGNOSES IN CASES WITH POSITIVE BLOODS.

| Psychosis. | Male. | Female. | Total. |
|---|---|---|---|
| *Organic.* | | | |
| Paresis and cerebral lues | 113 | 32 | 145 |
| Arteriosclerotic insanity | 7 | 2 | 9 |
| Organic brain disease | 1 | 2 | 3 |
| Senile dementia | 2 | 6 | 8 |
| *Functional and Toxic.* | | | |
| Dementia præcox | 8 | 4 | 12 |
| Manic-depressive insanity | 7 | 18 | 25 |
| Epilepsy | 1 | 2 | 3 |
| Imbecility | 3 | 9 | 12 |
| Infection-exhaustion | .. | 2 | 2 |
| Psychoneurosis | 1 | 2 | 3 |
| Alcoholic psychosis | 10 | 5 | 15 |
| Morphinism | 1 | 3 | 4 |
| Cardio-renal delirium | 1 | .. | 1 |
| Paranoid condition | 1 | 1 | 2 |
| Pre-senile delusional insanity | .. | 1 | 1 |
| Not insane | 1 | .. | 1 |
| Unclassed | 7 | 3 | 10 |
| Totals | 164 | 92 | 256 |

Of 164 positive blood tests among males, 113, or 68.8 per cent, occurred in cases with brain syphilis, *and the remaining 51 cases constitute only 6.8 per cent of the male admissions other than paretics (751).* Of the organic diseases other than paresis, in which syphilis *might* be concerned in the etiology, there are 10 cases, while positive tests occurred in 33 of the functional and toxic cases and in seven unclassed cases.

Of 92 positive blood tests among females, 32, or 34.8 per cent, occurred in paretics. *Excluding these, the remaining 60 positive cases constitute 8.5 per cent of 704 admissions*—a somewhat higher figure than for the non-paretic males, but not so great a difference as for the 1914 admissions alone (Lowrey[3]). Ten of the 60 fall into the "organic" group, 47 into the "functional and toxic" group, and three were unclassed.

Taking both sexes together, we find that 145 cases, or 56.7 per cent, of 256 cases with positive blood tests were paretic. *Excluding these, there are 111 positive blood tests among 1455 admissions, or 7.6 per cent.* About two-elevenths of these belong in the "organic" group; eight-elevenths in the "functional" group; and one-eleventh in the unclassed group.

## FINDINGS IN THE VARIOUS CLINICAL GROUPS.

Of the various groups in which positive blood tests were found, the most interesting is obviously paresis. Tests on the blood serum were performed in 168 cases diagnosed paresis or cerebral syphilis (one case). There were 145 positive, eight doubtful and 15 negative results. That is, 87.5 per cent were positive and 10.3 per cent were negative.

In no other group were the findings so high, and the results are presented in tabular form.

TABLE III.

| Psychosis. | Cases tested. | Positive. | |
|---|---|---|---|
| | | No. | % |
| Senile dementia | 103 | 8 | 7.7 |
| Imbecility | 113 | 12 | 10.6 |
| Epileptic | 35 | 3 | 8.6 |
| Dementia præcox | 240 | 12 | 5.0 |
| Arteriosclerotic insanity | 96 | 7 | 7.2 |
| Alcoholic psychoses | 213 | 15 | 7.0 |
| Manic-depressive insanity | 340 | 25 | 7.3 |
| Morphinism | 7 | 4 | 57.1 |
| Paranoid conditions | 34 | 2 | 5.9 |
| Toxic-infection-exhaustion | 29 | 2 | 6.9 |
| Psychoneuroses | 37 | 2 | 5.4 |
| Organic brain disease | 39 | 3 | 7.7 |
| Pre-senile delusional insanity | 6 | 1 | 16.6 |
| Not insane | 11 | 1 | 9.1 |
| Unclassed | 102 | 10 | 9.8 |

It will be noticed that, for the most part, the percentages range between 5 and 10 for each group. The one notable exception is the small group of drug cases. Here more than half gave a positive test. None of these cases were retested some time after the withdrawal of the drug, so it is impossible to say whether or not morphine has an effect on the reaction as seems to be the case with alcohol (*cf.* Craig[4]).

One interesting point comes out in a study of the cases of dementia præcox. Of the 12 cases with positive test, six were of the paranoid type, and they were characterized by the extravagance of their delusions.

It is hardly necessary to point out that larger series of cases in each psychosis are desirable. Accurate statistical conclusions cannot be drawn from so small a number of cases as we have in many of the groups reported in the present study. It is, nevertheless, evident that a person suffering from *any* psychosis may also be syphilitic, and that a positive blood Wassermann test ***does not necessarily mean a psychosis of syphilitic origin. It is very important in all these cases to examine the spinal fluid.***

The percentage of positive tests here reported is somewhat less than that reported on Danvers cases by Paine* who, however, only studied 200 cases. Smaller series of cases (separate studies of 1914 and 1915 admissions for the Annual Report) have given me about the same percentage as reported in this paper, so it is felt that these figures are approximately correct for the insane in general.

In this hospital, both provisional and determined diagnoses are made by the assembled staff after all data have been procured, hence it is impossible to give the exact number of cases in which the finding of a positive Wassermann in the blood has pointed the way to a correct diagnosis, but it is certain that a not inconsiderable number of cases have been cleared up by using the test. It takes very much less time to clear up the diagnosis with the aid of the test than if we depend on clinical observation alone. A number of very early cases, which would not otherwise have been diagnosed, have been determined in this way.

In less than half of the cases with a positive test has a history of syphilis been obtained. Several cases with a history of syphilis and good treatment have given a negative test.

## RESULTS OF THE TESTS IN THE SPINAL FLUID.

The spinal fluid is submitted to the Wassermann and other tests in two main types of cases, (a) those with positive or repeated doubtful tests in the blood, (b) those with clinical signs pointing to paresis (or other organic condition) and negative blood test. Among the earlier cases of this series, many cases with positive blood test were not punctured, but of this series, 276 had spinal

fluid tests performed. There are a few cases in which there was no suspicion of paresis, but puncture was done for some other reason.

The following table (IV) gives a summary of the results of the test for the sexes separately and together.

TABLE IV.—RESULTS OF SPINAL FLUID TESTS.

| | | Fluid Wassermann Test. | | | |
|---|---|---|---|---|---|
| Male. Blood W. R. | | Positive. | Doubtful. | Negative. | Unsatisfactory. |
| Positive | 130 | 83 | 5 | 41 | 2 |
| Doubtful | 18 | 4 | 1 | 12 | 1 |
| Negative | 38 | 9 | .. | 29 | .. |
| Totals | 187 | 96 | 6 | 82 | 3 |
| Female. Blood W. R. | | | | | |
| Positive | 59 | 26 | 1 | 32 | .. |
| Doubtful | 10 | 1 | .. | 9 | .. |
| Negative | 20 | 3 | .. | 17 | .. |
| Totals | 89 | 30 | 1 | 58 | .. |
| Both Sexes. Blood W. R. | | | | | |
| Positive | 190 | 109 | 6 | 73 | 2 |
| Doubtful | 28 | 5 | 1 | 21 | 1 |
| Negative | 58 | 12 | .. | 46 | .. |
| Totals | 276 | 126 | 7 | 140 | 3 |

Analysis of this table shows that there were 56 males and 30 females presenting clinical signs such that lumbar puncture was deemed necessary, despite the lack of a positive blood test. Of these, 17 gave a positive test in the fluid. There were 34 male and 32 female cases with positive blood test on whom puncture was not done. Of the cases with positive blood test, 82 of 130 males and 26 of 60 females, averaging over 50 per cent, gave also positive fluid tests. The number of unsatisfactory tests is high, but several of these cases died after a short stay in the hospital. Among the males, there were more positive than negative fluid tests; among the females, nearly twice as many negative as positive results.

In Table V will be found the spinal fluid (and blood) results in the different psychoses. It will be noted that of the 109 cases with positive blood and spinal fluid, 106 were paretics, one was an imbecile, one a drug case, and one a psychoneurotic. The later three may, in the course of time, develop paresis. Of 126 cases with

TABLE V.—BLOOD AND SPINAL FLUID FINDINGS IN CASES PUNCTURED.

| Psychosis. | Bl. W. R. | Male. Fl. W. R. | | | | Female. Fl. W. R. | | | Total. Fl. W. R. | | | | Bl. W. R | Male. Fl. W. R. | | | | Female. Fl. W. R. | | Total. Fl. W. R. | | | | Bl. W. R. | M. Fl. W. R. | | F. Fl. W. R. | | T. Fl. W. R. | | Total Cases. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P. | D. | N. | U. | P. | D. | N. | P. | D. | N. | U. | | P. | D. | N. | U. | P. | N. | P. | D. | N. | U. | | P. | N. | P. | N. | P. | N. | M. | F. | T. |
| Paresis | Positive. | 82 | 5 | 6 | 2 | 24 | .. | 3 | 106 | 5 | 9 | 2 | Doubtful. | 4 | 1 | 1 | .. | 1 | 1 | 5 | 1 | 2 | .. | Negative. | 8 | 2 | 2 | 1 | 10 | 3 | 111 | 32 | 143 |
| Cerebral syphilis | " | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Organic dementia | " | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | " | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | " | 1 | .. | 5 | 1 | 5 | 1 | 7 | 8 | |
| Arteriosclerotic | " | .. | .. | 6 | .. | .. | .. | .. | .. | .. | 6 | .. | " | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | " | .. | 5 | .. | 1 | .. | 6 | 12 | 1 | 13 |
| Senile dementia | " | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | .. | .. | .. | .. | .. | 1 | 1 |
| Alcoholics | " | .. | .. | 7 | .. | .. | .. | 5 | .. | .. | 12 | .. | " | .. | .. | 4 | 1 | .. | 2 | .. | .. | 6 | 1 | " | .. | 10 | .. | .. | .. | 10 | 22 | 7 | 29 |
| Manic-depressive | " | .. | .. | 6 | .. | .. | .. | 10 | .. | .. | 16 | .. | " | .. | .. | 2 | .. | .. | 3 | .. | .. | 5 | .. | " | .. | 3 | .. | 3 | .. | 6 | 11 | 16 | 27 |
| Dementia præcox | " | .. | .. | 3 | .. | .. | .. | 1 | .. | .. | 4 | .. | " | .. | .. | 2 | .. | .. | 1 | .. | .. | 3 | .. | " | .. | 3 | .. | 1 | .. | 4 | 8 | 3 | 11 |
| Imbecility | " | .. | .. | 2 | .. | 1 | .. | 7 | 1 | .. | 9 | .. | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | 1 | 1 | 1 | 1 | 2 | 10 | 12 |
| Inebriates | " | .. | .. | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | .. | .. | .. | .. | .. | 2 | 2 |
| Epilepsy | " | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | 2 | .. | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | 2 | .. | .. | .. | 2 | 3 | 1 | 4 |
| Psychoneuroses | " | 1 | .. | .. | .. | .. | .. | 1 | 1 | .. | 1 | .. | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | .. | 1 | .. | 1 | 1 | 2 | 3 |
| Paranoid condition | " | .. | .. | 1 | .. | .. | .. | 2 | .. | .. | 3 | .. | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | .. | .. | .. | .. | 1 | 2 | 3 |
| Infect.-exhaustion | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | " | .. | 2 | .. | 2 | .. | 4 | 3 | 2 | 5 |
| Morphin | " | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Traumatic | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | " | .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Not insane | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | 1 | .. | .. | .. | 1 | 1 | .. | 1 |
| Acromegaly | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | " | .. | 1 | .. | .. | .. | 1 | 1 | .. | 1 |
| Unclassed | " | .. | .. | 7 | .. | .. | .. | .. | .. | .. | 7 | .. | " | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | " | .. | .. | .. | .. | .. | 2 | 7 | 3 | 10 |
| Totals | ..... | 83 | 5 | 41 | 2 | 26 | 1 | 32 | 109 | 6 | 73 | 2 | ..... | 4 | 1 | 12 | 1 | 1 | 9 | 5 | 1 | 21 | 1 | ..... | 9 | 29 | 3 | 17 | 12 | 46 | 186 | 89 | 276 |

NOTES: P = Positive. D = Doubtful. N = Negative. U = Unsatisfactory.

positive fluid test, 121 were paretics; and in addition to the above three cases, there was one imbecile and one case of "organic" dementia.

Of the 143 tests on the spinal fluid of paretics, 123 were positive, six doubtful, 12 negative and two unsatisfactory. Hence there are, of 141 satisfectory tests, only 12, or 8.5 per cent, negative, while 87.2 per cent are positive. Several of these negative cases were tested more than once. There were 25 cases of paresis with blood but no fluid test. The one case of cerebral syphilis had a positive blood and negative fluid test. Not quite 90 per cent of these paretics had a positive blood test and the same proportion had positive fluid test, *and the test is positive in both blood and fluid in about 75 per cent of cases.*

The cases other than paresis with a positive fluid test, mentioned above, form a small residue of interesting cases.

In cases of paresis with a negative Wassermann, the other laboratory tests on the fluid are often positive. A forthcoming paper will deal with these results in detail.

## SUMMARY.

Statistics are presented dealing with the results of the Wassermann test on the blood serum of 1600 cases admitted to Danvers State Hospital. Only cases are reported in which the test has been used as a part of the routine examination.

Of 864 male cases tested, 164, or 19 per cent, were positive. Of 736 female cases, 92, or 12.5 per cent, gave positive tests. Of the 1600 cases tested, 256, or 16 per cent, were positive. Doubtful tests occurred in 3.87 per cent of the cases.

Including cases with positive spinal fluid test and negative or doubtful blood test, 273, or 17 per cent of 1600 admissions, give a positive test at some point.

Of 164 positive blood tests among males, 113, or 68.8 per cent, occurred in cases of nervous syphilis. Of 92 females with positive blood test, 32, or 34.8 per cent, were paretics. Of 256 cases with positive blood test, 145, or 56.7 per cent, are cases of nervous syphilis. Excluding paretics from all figures, positive tests occurred in 7.6 per cent of 1455 admissions.

Of the non-paretic cases with positive blood, 20 are "organic," 80 are "functional" and 10 are "unclassed."

It appears that, if an insane man has a positive blood test, the chances are better than even that he will be a paretic; while if a positive test appears in an insane female, the chances are that she will not be a paretic. When paresis is excluded, the chances are about three in four that the person with positive blood will have a "functional" psychosis.

An unexplained finding is the high percentage of positive blood tests among morphin habitues (small number of cases). No other non-paretic group contains any considerable group of cases with positive Wassermann. A person suffering from any psychosis may be syphilitic without belonging to the nerve syphilis group.

Doubtful Wassermann tests later show positive reactions in blood or spinal fluid in about one-quarter of the cases. The test should always be repeated.

Among the paretics of this series, the blood test was positive in 87.5 per cent and negative in 10.3 per cent. The spinal fluid test was positive in 87.2 per cent and negative in 8.5 per cent, while the test was positive in both fluids in 75 per cent of the cases.

Of 276 cases with test on the spinal fluid, there are 126 positive results. Of these, 109 had blood and fluid test both positive; five had doubtful blood and positive fluid test; 12 had negative blood and positive fluid test.

Of the 126 cases with positive fluid test, 121 were paretics; two imbeciles: one was organic dementia; one a heroin case; one psychoneurotic. The latter five may in the course of time develop paresis.

The statistics here presented give evidence of the great practical importance of the Wassermann test in practical psychiatry.

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# THE SENSIBILITY OF THE NIPPLE AREA WITH REFERENCE TO MENTAL DISEASE.

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In the observation of those nervous and mental affections of whose bodily nature we know little, we sometimes find motor and sensory symptoms, contradictory in character, and apparently obeying no known law. Of the disturbances, pain is the most frequent. Small isolated zones, painful to the slightest touch, exist fairly constantly, at times associated with areas of lessened or increased sense of touch. Oppenheim finds cutaneous and mucous anesthesias often associated with hyperesthesias, and areas on which painful stimuli are not normally perceived as painful. These areas may be hypersensitive to the slightest touch, which in itself may elicit acute pain. These areas have been called hysterogenic zones, but they are probably not entirely found in hysterical conditions.

Of these so-called hysterogenic zones—supposedly indicators of higher functional derangements—perhaps the most significant are those in connection with the sexual sphere. Graves,[1] in his investigation of sensory disturbances involved in cases of hysteria of both sexes, found a peculiar abnormality of sensation, namely, an anesthesia associated with hyperalgesia sharply confined to the areola-nipple area. The dividing line between the anesthetic and hyperalgesic area and the area of normal sensibility was very sharp, the change from the normal sensation being found wholly within the pigmented area. As this peculiarity was more or less constant in 30 cases of typical hysteria, the conclusion was drawn that "areola-nipple anesthesia associated with hyperalgesia is a pathognomonic and fairly constant stigma in hysteria." He also notes experiments on the normal individual, in which, as a

[1] W. W. Graves. Anesthesia associated with hyperalgesia sharply confined to areola nipple-area of both breasts; a new and apparently constant stigma in hysteria. Journal of Nervous and Mental Disease, Oct., 1905.

rule, the reverse sensory conditions were found, the majority claiming to perceive "touch" more, and "pain" less acutely in the areola-nipple area than in the surroundings parts. A few noticed little or no difference. For a number of years this phenomenon was given credence as a diagnostic sign, without knowledge of its physiological and anatomical significance.

In a series of experiments on the accuracy of localization of touch on different bodily segments, Franz[2] observed that in the normal areola-nipple area, touch stimuli gave no response until the pressure was more than that for light touch on the surrounding parts. The parts were insensitive to light touch. In no case tested was it found possible to produce a sensation with the light touch of a camel-hair brush, it was usually necessary to have considerable deformation of the surface before any sensation was obtained. This areola-nipple area was also found to be more or less insensitive to heat and cold. From his experiments it was apparent that the sensibility of the nipple and areola, in the normal individual, is less than that of the surrounding parts of the breast.

In a series of localization tests, performed for other purposes, I was able to test the sensibility of the normal nipple area, and in all cases I found total insensibility to light touch (cotton-wool), associated with a lack of accurate localization for deep touch. This confirms the observations of Franz, and would indicate that the condition is not found only in hysterics, as Graves supposed.

The deep touch sensation from stimulation of the nipple was usually located somewhere on the breast outside of the pigmented area. Pin pricks, in both areola and nipple regions, were at times quite accurately localized. They were always felt acutely, being associated with a disagreeable sensation of burning and tingling, and accompanied by frantic warding-off movements.

The prominence given to the sexual side, or origin, of certain psychoses, suggested the possibility of some concomitant sensory changes in the reproductive organs, both primary and secondary, and the present work was undertaken in order to discover any changes which might be present.[3] The primary sexual organs

[2] S. I. Franz. The accuracy of localization of touch stimuli on different bodily segments. Psychological Review, March, 1913.

[3] I am indebted to Dr. S. I. Franz, of this institution, for the suggestion of the problem, and for his advice during its investigation.

are, for various reasons, difficult to test, in some cases impossible, and a beginning was made with the secondary sexual apparatus, the breast and especially the nipple-areola region. Ten cases were chosen in which a sexual emotional content appeared to be a prominent exciting factor. In the nipple region tests were made of light touch, pressure, and pain as elicited by pin pricks. Each individual was tested for each form of sensibility ten times, in order that the results might not be considered accidental. The patient—blind-folded and reclining on the examining couch—was asked to indicate by "yes" or "no" when a stimulus was given, and to locate the point stimulated by means of the opposite index finger. After the first series of stimulations, erection of the nipple (unless already apparent) was brought about by means of irritation or by a light application of xylol. The tests were then repeated, and after relative elimination of the distressing elements of pain stimuli, by means of a few passes over the part with damp cotton-wool, a series of tests for "free word associations" to deep touch was made. The results of this series varied considerably, as is shown below.

Case I.—Well-developed white woman, in excellent health, aged 49, married; mother of two children, both bottle-fed. Diagnosis: undifferentiated confusion, with delusions as to husband's fidelity. Breasts medium in size, firm; nipples small; areola pink, about 5 cm. in diameter, with but little veining, and few glands of Montgomery.

*First Series.*—Light touch not felt on any part of the nipple-areola area. Deep pressure, felt on all parts, but poorly localized, mostly on surrounding breast regions. Pain (pin pricks) felt, and the sensations were reported to be more acute than usual. The most intense sensations were obtained from the top of the papillæ.

*Second Series* (after erection was induced).—No sensation to light touch, deep pressure felt more strongly than before, and there was a decidedly "embarrassing" feeling associated with the stimulations. Pain was also judged to be more acute than in the first series, and the patient continually protested against the repetition of the test.

*Third Series* (word association—pressure).—The associations and some explanations of them are as follows:

*Funny.*—This was used more in the sense of embarrassing, which was used as a descriptive term for the sensation itself.

*Go.*—This reaction was a word indicating her desire, or wish, to get away from the embarrassing situation.

*Brook.*—The recollection of an occurrence in early life, when she sat on the bank of a small stream in which some naked youths were bathing.

She recalled her great embarrassment and her leaving the scene hastily. The recollection of this scene is always attended with a shame-like feeling.

*Boat. Trees. Shadow. Afternoon. Floating.*—These five word associations were due to a later episode, the sexual nature of which may be imagined.

Following these eight reactions there were two failures. The patient was resistive, saying that nothing more would come to her mind, etc.

*After Effects.*—There were no untoward after effects.

CASE II.—White woman, anemic, aged 46, married; mother of two children, breast-fed. Manic-depressive type with cardiac complications; continually yearning for husband's withdrawn affections. Breasts large, somewhat pendulous; nipples large and long; areola 7 cm. in diameter, darkly pigmented.

*First Series.*—Light touch not felt on any part of nipple-areola area. Deep pressure, felt on all parts, but poorly localized. Pain (pin pricks) felt, but not localized, described as a confused unbearable sensation.

*Second Series* (after erection was induced).—No sensation to light touch, deep pressure felt more strongly than before, much erotic content aroused, due, as patient admitted, to the fact that manipulation of the breast was frequently the prelude to copulation. Pain was so acute that patient refused the test.

*Third Series* (word association—pressure).—As follows:

*God.*—This reaction was not apparently connected with the stimulus, for she explained that she meant that God would take care of her, and that she should not worry.

*Helpless.*—This was a description of her general feeling.

*Love.*—A depressive idea, that she was not treated as a wife should be, and that love (sensual), which she desired, was being bestowed on another woman.

*Baby.*—This was a recall of her younger and favorite child, whom she preferred to the older on account of the likeness of the latter to the father.

*Blue.*—Not a color, but a description of her own feeling when she thought of the association of her husband with other women.

*Black.*—Similar to the last, descriptive of her feeling that "the loss of her husband's fidelity took the taste of happiness from her."

*Darkness.*—The same as "black."

There were three failures to respond in this case.

*After Effects.*—For the rest of the day patient wept bitterly at any mention of her husband.

CASE III.—White woman, poorly nourished, aged 53, single; a case of undifferentiated confusion, associated with frequent attacks of sexual excitement. Breasts small, firm; nipples medium in size, firm and round; areola 5 cm. in diameter, slightly pigmented, with numerous long hairs about its margin.

*First Series.*—Light touch not felt on any part of areola-nipple area. Deep pressure elicited no response, although it was evident that the touch had been perceived. Pin pricks were angrily warded off.

*Second Series* (after erection was induced).—No sensation to light touch. Deep pressure brought no response, but patient began to exhibit signs of sexual excitement, declared that the nurses were men in women's clothing, and that attempts at sexual assaults on her body were being committed by them; became so excited that the test for pain was not made.

*Third Series* (word association—pressure).—Patient refused to co-operate.

*After Effects.*—Patient's speech and actions showed a marked degree of sexual excitement at frequent intervals for several days.

Case IV.—White woman, excellent health, aged 38, single, actively homosexual; suffering from a depression due to chronic alcoholism and emotional exhaustion. Breasts small, well-shaped, firm; nipple small, with slight elevation above level of areola; areola pink, 5 cm. in diameter, blue-veined, few glands, no hair.

*First Series.*—Light touch not felt on any part of areola-nipple area. Deep pressure felt on all parts, but poorly localized. Pain (pin pricks) felt, not definitely localized; reported as being distasteful in character.

*Second Series* (after erection was induced).—Sensation of light touch varied; three times the stimulus was felt, when it was ascertained that a dependent portion of the cotton-wool "dragged" on the side of the nipple, bringing about a slight deformation of the surface. Deep pressure felt and accurately localized, patient admitted a pleasurable excitement, accompanied by sensual imagery, also confided that a continuation of such stimuli would induce an episode of sexual character.

*Third Series* (word association—pressure).—As follows:

*Fever.*—This was an abbreviation for "fever of desire," which expression was used by the patient whenever she had certain experiences like those which occurred to her in early life, when in an early episode she thought a feeling of warmth indicated a fever.

*Pepper.*—The recollection of a story told to her many years before by a girl companion that this was used for inducing sexual desire.

*Fear. Desire. Weak.*—These refer to certain sadistic tendencies frankly confessed by the patient.

*Mouth.*—This was a frank reference to intra-buccal kissing.

*Hurry.*—This was repeated many times and was said by the patient "to keep one keyed up to a high level."

*Beautiful. Girl.*—Imagery of desire, the patient being homosexual.

*Baby.*—Also imagery, of her cuddling her "sweetheart" who acted as an infant.

*After Effects.*—Fifteen minutes later patient remarked that the sensation of pressure was still present, that the slightest touch of clothing caused erection of the nipple, accompanied by a feeling of warmth and pleasure in the primary sexual areas.

Case V.—White woman, good physique, aged 28, single, prostitute, neurasthenic; for three months previously had lived at a gay summer resort as mistress of an elderly man. Breasts medium in size, well-formed,

firm; nipples prominent, round and firm; areola 7 cm. in diameter, somewhat pigmented, hypertrichosis about areola margin.

*First Series.*—Light touch not felt on any part of areola-nipple area. Deep pressure felt, but poorly localized. Pain (pin pricks) felt and accurately localized, accompanied by feeling of dislike and avoidance.

*Second Series* (after erection was induced).—No sensation to light touch. Deep pressure felt more acutely than in first series; called forth a series of vague pains, pleasurable in character, which were remarkable for their long duration and "explosive" effects; not only was the original stimulus long in duration, but an after-sensation occurred that presented itself with variable intensity at frequent intervals for a half hour afterward. She admitted a pleasurable excitement of the genitalia in connection with this after-image, accompanied by other physical phenomena, such as alternate hot and cold flashes, shivering, chilliness, rapid respiration. She evinced the desire to continue the sensation until a culmination of a pleasurable character occurred. Pain (pin pricks) was intense, at times felt before contact occurred, described as an unbearable, "keyed-up" sensation. The memory image of this sensation occurred frequently, attended by a nervous shivering.

*Third Series* (word association—pressure).—As follows:

*Hurry. Hurry. Hurry. Hard. Harder. Harder. Hurry. Hurry.*—The first eight reactions were not associations in the accepted use of the term, but only her usual reactions to accentuate the sexual sensations.

*Hot.*—A personal term for a state of desire.

*Red.*—A true association, dating from early childhood and referring to sexual activities, the origin of which the patient could not give.

*After Effects.*—Nipples remained in a semi-erected condition for 24 hours, being easily stimulated into full erection by irritation of clothing. Dreams were frankly sexual or sexually symbolic (snakes, babies, toads, copulation, etc.). When memory of stimulus recurred, a desire for sexual activity obtruded itself into consciousness.

Case VI.—White woman, physical health excellent, aged 27, married, no children; infrequent attacks of excitement alternating with periods of depression. Breasts medium in size, cup-shaped, firm; nipples round, firm; areola 7 cm. in diameter, pink, blue-veined, slightly pigmented, no trichosis.

*First Series.*—Light touch not felt on any part of areola-nipple area. Deep pressure felt but not localized. Pain felt and accurately localized.

*Second Series* (after erection was induced).—No sensation to light touch. Deep pressure felt; not accurately localized. Patient exhibited marked sexual emotion. Pain (pin pricks) severe, lasting and "explosive"; endured for several moments after original stimulus had ceased.

*Third Series* (word association—pressure).—As follows:

*Stop.*—This was not a true association, but an order to cease because she believed the stimulus was to be increased to the painful point.

*Monkey.*—Visual image of seeing a large monkey hold a small monkey to the breast. She then thought that motherhood was sweet to all animals, and that having a baby at her breast would be a tender feeling.

*May. River.*—Both of these were visual images of having attended a picnic in her later girlhood, of having hugged a tree and of having the feeling of pressure on her breasts therefrom.

*Girl. School. Letter. String.*—This was the same association repeated, of having received at school a billet-doux tied with a red string.

*Box.*—A theater box which she desired to occupy, where she had seen women in decollete dress.

*After Effects.*—Patient quiet, pensive—apparently no untoward effects.

CASE VII.—White woman, small in stature, poorly nourished, aged 39, married; mother of three children, all bottle-fed; grief over husband's defection initiating attacks of depression. Breasts small, poorly developed; nipples retracted, forming a crater; papillæ prominent in pit; areola elevated, 5 cm. in diameter, darkly pigmented, few scattered short hairs at areola margin.

*First Series.*—Light touch not felt on any part of areola-nipple area. Deep pressure felt, not localized. Pain (pin pricks) elicited sharp, stinging sensation.

*Second Series* (after erection was induced).—The areola became markedly elevated. No sensation to light touch. Deep pressure felt, not localized. Patient became rigid, admitted of pleasurable feelings, induced by referred sensations in true sexual organs. When inverted nipple stimulated only a sense of pain elicited. Pain (pin pricks) on all parts of area intensified.

*Third Series* (word association—pressure).—As follows:

*Sky. Moon. Wind.*—A beautiful evening when the wind was soft. She could not explain why she thought of it.

*Hand.*—The hand of God. (No other explanation.)

*Heaven. Hell.*—An association regarding the possibility of the eight children which were killed by self-induced abortion, having souls, and their probable whereabouts, and whether or not she would be punished for her acts.

*Toad.*—Visual image of a loathsome thing. No reason for the association could be given.

*Child.*—Her own child, whom she loves dearly, and who is to be operated upon.

*Baby.*—This had reference to the condition of her nipple which could not be suckled by an infant.

*Angel.*—This "means pure and white. Not many people are that way."

*After Effects.*—Patient became quite inaccessible, sat for hours gazing into space.

CASE VIII.—White woman, well-nourished, florid, aged 42, widow; one child, breast-fed. Diagnosis: undifferentiated confusion. Breasts large, well-shaped; nipple round, firm; areola 7 cm. in diameter, darkly pigmented.

*First Series.*—Light touch not felt on any part of areola-nipple area. Deep pressure poorly located. Pain (pin pricks) felt intensely.

*Second Series* (after erection was induced).—No sensation to light touch. Deep pressure felt, located accurately. Admitted desire for sexual satis-

faction, accompanied by associated sensations of pleasurable excitement in both nipple and genital areas. Pain felt and protested against with such emphasis that test was discontinued.

*Third Series* (word association—pressure).—As follows:

*Man.*—A certain man with whom she recently fell in love.

*House.*—Her own home, which seems empty without some one in it. She would like to have the "certain man" occupy it.

*Red.*—Meant "love."

*Chair. Table. White. Paper.*—The association of a chair in which she usually sat at a table and thought of the man previously referred to. The paper made her think that perhaps other women were writing to him.

*Trees. Road.*—"The way to happiness. One goes a long way to get it."

*Forest.*—This was a recall of a dream in which she saw her husband's grave. The grave opened and the lid of the coffin came up. She believed this meant that all of her hopes were buried.

*After Effects.*—Patient laughed sillily, volunteered foolish remarks about her regard for a man about whom she attempted suicide. Delusions about daughter's chastity present.

CASE IX.—White women, well nourished, aged 68, widow, three children. Senile dementia, delusions of a happy love marriage, and of persecutions through electricity. Breast small, somewhat pendulous; nipples long, poorly formed; areola 7 cm. in diameter, darkly pigmented, few scattered hairs at margin.

*First Series.*—Light touch not felt on any part of the areola-nipple area. Deep pressure felt, not localized. Pain (pin pricks) felt, elicited an angry protest.

*Second Series* (after erection was induced).—No sensation to light touch. Deep pressure brought no response, patient smiled in a silly manner and remarked that "young married folks ought to be happy"; refused cooperation in localization test. Pain (pin pricks) felt acutely, causing a sensation of a "red-hot coal" being applied to the part.

*Third Series* (word association—pressure).—As follows:

*July.*—This was an apparent association to the sensation of warmth that the stimuli gave her.

*Money.*—Association with "care-free" love. She believes she has $196,000,000,000, and that she has no more need for work or worry.

*Electricity.*—Probably also a description of sensations, or an association to the sensation of warmth, as in the first test. She believes that she has electric currents in the form of darts passed through her body.

*Man.*—This was an idea of the particular man "upstairs," who was operating the electrical machine which was sending the currents into her body.

*Go.*—An expression of an apparent half-hearted desire to escape from the electrical currents.

*River.*—The "River of Life," referring to Biblical matters, in which it is a broad stream that flows in through the gates of Paradise. The sexual content is not evident but concealed.

*Moon. Silvery.*—At times there is a ring around the moon. This means for her both money and marriage, the two being essential for happiness.

*Electricity.*—Nearly the same as in the second association given above, referring to the warm, tingling sensations which were pleasurable.

*Science Healer.*—She has been treated by Christian Scientists, and is even at this time having "absent treatments." A man whom she met at one of the gatherings is here referred to and she is incensed against him (probably the one to whom she believes she is married). Whether or not he is the individual who is sending the electrical darts through her body could not be definitely discovered, although there is more evidence than a suspicion that this is the case.

*After Effects.*—No untoward effects noted. Patient sat for hours in a dreamy state, made no comment upon physical state, except declaring that electrical darts were continually being passed through her body.

CASE X.—White woman, poorly nourished, neurotic in type, aged 48, married, no children; undifferentiated confusion, characterized by frequent attacks of sexual excitement. Breasts small, emaciated; nipples large and prominent; areola 5 cm. in diameter, darkly pigmented, hypertrichosis at margin.

*First Series.*—Light touch not felt on any part of areola-nipple area. Deep pressure felt and accurately localized. Pain (pin pricks) felt, accurately localized, described as a burning sensation similar to that produced by nettles.

*Second Series* (after erection was induced).—No sensation to light touch. Deep pressure accurately localized, patient became garrulous, language foul and profane, ideas frankly wish-fulfilling in character. Admissions of pleasurable sexual excitement obtained through nipple-manipulation by the opposite sex, vivid imagery of sexual act with comments upon perverse acts, followed each other in rapid succession. Pain (pin pricks) felt acutely; apparently brought about a subsidence of the preceding erotic mood. Patient began to whimper, became anxious, fearful about small home affairs, at times railed angrily against the impotence of her elderly husband.

*Third Series* (word association—pressure).—The word-associations in this test were too vulgar and profane for repetition.

*After Effects.*—No variance of daily occurrences. Patient's thoughts entirely confined to sexual episodes.

These ten cases show the following:

(1) A decrease or lack of sensitivity to light touch throughout the whole areola-nipple region.

(2) The retention but inaccurate localization of pressure sensation under normal conditions.

(3) The exaggeration of pain sensations, both in the erected and in the unerected states, but more intense in the former.

(4) The increase in sensitivity for pressure and pain stimuli when an erection of the nipples was induced.

(5) The "reference" of the sensations to the true sexual organs; at times by the stimulation of the unerected nipple, but in nearly every case when the erected nipple is stimulated.

(6) There is probably no great difference in the quality of the sensations of the patients and the normal individuals previously reported upon, and those whom I have had the opportunity to test. Whatever difference exists, is probably an increase, or intensification, in the pathological cases.

(7) The "reference" to the true sexual organs is more constant in the patients here reported upon, but this may be due to the fact that all had had previous sexual experiences, and some of the normal individuals presumably had not. All the patients who were examined were of the so-called "sexual" type, which condition may be contributory to this result.

(8) In most cases the associations reported indicate plainly the sexual content without any further analysis.

(9) The anesthesia with hyperalgesia of the nipple area, thought by Graves to be pathognomonic of hysteria, is probably only a slight variation of a normal condition.

In this connection it is interesting and of value to summarize the most recent findings regarding the nerve supply to this part of the body. We find that the nipple is abundantly provided with nerve fibers, ending in capsullated and non-capsullated forms. Among the various end-organs to be especially emphasized is the great number of well-developed simple and compound genital bodies, their presence permitting the conclusion that the innervation of the nipple is more closely related to that of the genital organs than to that of the skin. To this innervation may be due the evident association of sensation referred from the nipple to the true sexual organs.[4]

[4] Judging by analogy we may believe that the grouping in the spinal cord of the impulses resulting in pain, touch, temperature, etc., may be paralleled by the association of these genital sensation impulses. This might be explanatory of the "reference," although, with regard to the anatomical connections, information is lacking.

The prolonged after effects found in most of the patients are of greatest interest. This difference from the condition in those normal individuals who have been examined is marked. It seems likely that the more intimate connection between the sexual organs, primary and secondary, is a factor in the production of sexual ideas and in the development of sexual feelings or desires. An " incipient " irritation of the nerve endings, although not yet felt in full consciousness, may be the starting point of a sub-excitement, a frequent repetition of which may produce lasting effects. The irritations of dress, of weather conditions, and other forms of stimuli, may evoke in patients in whom the connections between the primary and secondary sexual organs are most intimate and most intense, those ideas and tendencies to action which had been previously deplored or repressed, thus stirring into activity some experience or desire stored up in the unconscious and long since forgotten.

That diseases of the sexual organs tend to influence mental life has long been recognized, but little is known scientifically regarding the normal sexual feelings and sensations. Careful analysis of the sexual sensations is lacking, although it is apparent that an understanding of them might give us information of value for the explanation of many perverse or abnormal ideas. Many hypothetical explanations have been offered, but in order that we may correctly interpret morbid mental processes we must have better and more intimate knowledge of the physiological processes than we possess at present. We must have more specific knowledge of the normal for comparison with the abnormal. The present work aims to give for one of the accessory sexual organs a beginning of this information, without which there will persist a sharp clinical distinction between mental and physical, which does not in reality exist. Whether or not the pressure and pain hyperesthesias in these cases are due to " ideas," or the " ideas " due to the hyperesthesias, can be concluded only after further study and more careful examination.

# THE TREATMENT OF PARESIS (PRELIMINARY REPORT).*

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## INTRODUCTION.

Since 1913 a considerable amount of work has been done in treating the different forms of tertiary syphilis of the central nervous system, intraspinously with salvarsan and neosalvarsan.

At one time these diseases were looked upon as " parasyphilitic " in origin, but the researches of Noguchi, Moore, Marie and Levaditi, who have found the treponema pallida in the brains and cords of general paralytics and tabetics, have conclusively proven that they are active syphilitic processes.

Previous to the discoveries of the above named observers, these diseases were vigorously treated with mercury and iodides, but with little or no success. The reason that they did not respond to this treatment was not obvious until it was found that the choroid plexus has a selective action which prevents practically all drugs and antibodies from entering the cerebro-spinal fluid.

When this fact became established the various workers began to look for a method whereby medicinal agents could be mingled with the cerebro-spinal fluid and not be filtered out by the choroid plexus. Marinesco injected into the spinal arachnoid cavity the blood of syphilitic patients previously treated with salvarsan. Robertson followed the same method. Sicard and Lapointe injected one-tenth of a milligram of mercuric cyanide dissolved in five cubic centimeters of saline solution into the cerebral subarachnoid space and later tried minimal doses of neosalvarsan by the same method. Forester injected into the cerebral subarachnoid space and into the cerebral ventricles 20 cubic centimeters of the patient's own serum.

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Swift and Ellis devised a method similar to that reported by Marinesco and Robertson, but with some modifications, which will be described in another part of this paper.

The method of Swift and Ellis has been tried by numerous observers in America and in Europe. Some of these men have reported excellent results, while with others the results have not been so promising.

In this institution, the New Jersey State Hospital at Morris Plains, we have treated 15 patients suffering from paresis with salvarsan and neosalvarsan. Fourteen of these patients were treated by the intraspinous method of Swift and Ellis and one by the intraspinous and intracranial methods combined. With the latter method two intracranial treatments were given at four weeks interval along with three intraspinous treatments.

## TECHNIQUE.

The technique governing the treatments was that devised by Swift and Ellis and is as follows:

One hour after an intravenous injection of salvarsan or neosalvarsan 50 cubic centimeters of blood were withdrawn from a vein with a large-bore needle into a sterile, side-necked, 100 cc. test tube, and allowed to clot, then placed in the ice-box over night. The following morning the clear serum was drained off through the side neck into a sterile test tube, and diluted to a 40 per cent solution with normal salt, then inactivated for one-half hour in a water bath at 56 degrees centigrade.

The interval between the intravenous injection and the withdrawal of the blood was later reduced to 20 minutes, because it was demonstrated that the salvarsan content in the blood was at its height at the end of 20 minutes, and that it was impossible to find a trace of the drug at the end of an hour.

The serum being ready, a lumbar puncture was made and the cerebro-spinal fluid allowed to flow until there was a considerable interval between the drops.

A 30 cc. luer syringe, to which was attached a rubber tubing 40 centimeters long, was filled with the diluted serum and this serum allowed to flow into the tube to expel the air. The free end of this tube was then attached to the end of the lumbar puncture

needle, the syringe elevated and the serum allowed to flow into the spinal subarachnoid space.

When the entire amount of serum had flowed into the subarachnoid cavity, the patient was put into bed, the foot of which was kept in an elevated position for four hours.

The patients were allowed to get up after 24 hours, if there were no severe reactions from the salvarsan.

With the intracranial case the technique was the same as in the intraspinous cases up to the administration of the salvarsanized serum. Here a trephine opening was made in the skull over the anterior central gyrus, a small-bore, curved needle was introduced beneath the dura and the serum allowed to flow into the subdural space. Previous to the administration of the serum a lumbar puncture was made and 25 cubic centimeters of cerebro-spinal fluid withdrawn.

The reaction following the administration of salvarsan and salvarsanized serum was very slight. In some cases there was a slight elevation of temperature, in two cases there was considerable pain in the lower extremities for 24 to 48 hours, and in three others there was considerable œdema of the lips and tongue, lasting one to three hours.

Special attention was given to the carrying out of the Wassermann tests and to the cell content of the cerebro-spinal fluid. All the tests were made with plain alcoholic extract of guinea pig heart and all were controlled with known positive and negative sera.

The cell counts were made with a Fuchs-Rosenthal chamber and methyl-violet and acetic acid used as a staining agent. Two counts were made on each specimen of fluid and if there was a marked difference in these counts a third or even a fourth one was made and the average of these taken.

Noguchi's butyric acid method was employed for determining the globulin content.

## REPORT OF CASES.

In selecting our cases for treatment we endeavored to employ those which we thought would be the most amenable to treatment, that is, the earliest cases we had and those in the best mental and physical condition.

The following gives a short abstract of each case; the clinical observations following treatments; the Wassermann reaction with the blood and cerebro-spinal fluid; the cell and globulin content of the latter, before and after treatment; the dose of salvarsan and neosalvarsan given, and the percentage and amount of serum injected into the spinal subarachnoid cavity.

1. F. R. Admitted March 19, 1913, age 38, occupation purchasing agent, chancre in 1899, onset of psychosis 14 months previous to date of admission.

*Physical Status.*—Very anæmic and poorly nourished; pupils unequal and stationary; tremors of tongue, facial muscles and extended fingers; slurring speech; ataxic gait, and marked Romberg.

*Mental Status.*—Memory greatly impaired; marked euphoria; grandiose ideas; very irritable at times and had no insight into his condition.

This patient received 10 complete treatments with neosalvarsan. The cell content of the spinal fluid was 40 before beginning treatment and 52 when last treatment was given. The Wassermann reaction with the blood and the spinal fluid remained positive throughout the course of treatment and the globulin content remained above normal.

After the first three treatments he showed considerable physical improvement. He gained in weight and assumed a more healthy color, his appetite improved and his pupillary reflexes returned to normal. He continued to improve physically throughout the course of treatment, but there was no change in his mental condition, except that he became more quiet. At present he is very much demented and takes little or no interest in his surroundings. Thirteen months have elapsed since last treatment.

2. E. K. Admitted August 20, 1913, age 50, occupation electrical engineer, chancre 17 years ago, onset of psychosis about one year previous to date of admission.

*Physical Status.*—Poorly nourished; pupils unequal, stationary and dilated; tremors of tongue, facial muscles and extended fingers; slurring speech; walked on a very wide base.

*Mental Status.*—Memory good; marked euphoria and grandiose ideas; very mischievous and was constantly interfering with the other patients; had no insight into his condition.

This patient received six treatments with salvarsan and neosalvarsan intravenously and five intraspinously. The cell content of the cerebro-spinal fluid was reduced from 39 to 15 cells per cm. The Wassermann reaction with the blood and spinal fluid remained

positive throughout the course of treatment and the globulin content remained above normal.

He began to show evidences of improvement in his mental and physical condition after the second treatment. He continued to improve rapidly and was given parole. His mind became perfectly clear and he had good insight into his past and present conditions. His speech remained unsteady, tremors of facial muscles and extended fingers persisted, pupils remained stationary and he walked on a wide base.

He was taken home by his friends on July 5, 1914.

3. E. T. Admitted July 12, 1913, age 35, occupation cab driver, admitted syphilis but date unknown, onset of psychosis about one year previous to date of admission.

*Physical Status.*—Anæmic and poorly nourished; pupils equal and stationary; tremors of facial muscles and extended fingers; slurring speech; ataxic gait, and marked Romberg.

*Mental Status.*—Memory impaired and clouded; slight euphoria; excitable and unstable; had poor insight into his condition.

This patient received seven complete treatments with salvarsan and neosalvarsan. The cell content of the cerebro-spinal fluid was reduced from 114 to 5.1 cells per cm. The Wassermann reaction with the blood and cerebro-spinal fluid ranged from two plus to four plus, the last, taken seven months and eight days after last treatment, was four plus.

He did not at any time show signs of improvement in his mental or physical condition. He died with exhaustion from convulsions 10 months after last treatment.

4. M. G. Juvenile paresis. Admitted May 24, 1913, age 19, occupation housework, onset of psychosis about one month previous to date of admission.

*Physical Status.*—Well nourished; pupils stationary and irregular; tremors of tongue and extended fingers; marked Romberg; exaggerated reflexes.

*Mental Status.*—Emotional, elated, silly demeanor; euphoric; made irrelevant replies to questions and has no insight into her condition.

This patient received four complete treatments with salvarsan. The cell content of the cerebro-spinal fluid was reduced from 37 to 17.1 cells per cm. The Wassermann reaction with the blood and spinal fluid remained positive throughout the course of treatment. The globulin content remained above normal.

There was some improvement in the patient physically, but no change was noted in her mental condition. She is very much demented. Over 13 months have elapsed since last treatment.

5. L. W. Admitted January 19, 1914, age 50, occupation housewife, denied syphilis, onset of psychosis 10 months previous to date of admission.

*Physical Status.*—Fairly well nourished; pupils equal and stationary; tremors of facial muscles and extended fingers; slurring speech; ataxic gait, and marked Romberg.

*Mental Status.*—Memory impaired for recent events; exalted, euphoric, marked grandiose ideas; sensorium keen; had no insight into her condition.

This patient received five complete treatments with salvarsan and neosalvarsan. The cell content of the cerebro-spinal fluid was reduced from 52 to 6.1 cells per cm. The Wassermann reaction with the blood remained positive throughout the course of treatment, but with the cerebro-spinal fluid it was reduced to negative after three treatments. The globulin content remained above normal. There was slight improvement in her mental condition two months after the last treatment was given and there was some improvement in her physical condition immediately following the treatment.

She was taken home by her friends on September 30, 1914, and was readmitted April 24, 1915. When readmitted she was in an excited and violent state. The Wassermann reaction with the blood and spinal fluid was four plus.

6. F. H. First admission, March 31, 1910; second admission, March 27, 1911; and third admission September 18, 1911, age 47; occupation, paper broker; admitted syphilis, but date unknown; onset of psychosis, one and one-half months previous to date of admission.

*Physical Status.*—Very poorly nourished; is quite feeble and spends most of his time in bed; control of sphincters lost; pupils stationary and unequal; slurring speech; tremors of facial muscles and extended fingers.

*Mental Status.*—Memory very poor; disoriented for time and place; euphoric; had grandiose ideas, and had no insight into his condition.

This patient received five treatments with salvarsan and neosalvarsan. The first and third were given intracranially and the others were given intraspinously.

The Wassermann reaction with the blood and cerebro-spinal fluid was reduced to negative, but the blood serum later gave a positive reaction. The globulin content of the spinal fluid remained above normal.

After the first two treatments he was able to be up and about the wards and out in the yard; control of sphincters returned, and the gained considerably in weight. He became very much brighter and was able to recognize the various physicians and attendants. His insight into his condition did not improve.

He remained in this condition for 10 months, then developed convulsions and died three days later.

7. A. D. Admitted February 18, 1914, age 48; occupation, laborer; denied syphilis; onset of psychosis, six months previous to date of admission.

*Physical Status.*—Nutrition fair; pupils irregular and stationary; tremors of tongue and facial muscles; slurring speech; ataxic gait, and marked Romburg.

*Mental Status.*—Memory impaired; ideation blunted, incoherent and unstable; no euphoria or grandiose ideas.

This patient received five complete treatments with salvarsan. The cell content of the cerebro-spinal fluid was reduced from 80.1 to 29.2 cells per cm. The Wassermann reaction remained positive throughout the course of treatment and the globulin content of the spinal fluid remained above normal.

After three treatments it became necessary to confine him to bed because of progressive weakness. He died with convulsions three weeks after last treatment.

Autopsy revealed an extensive curdy degeneration of the basil ganglia, which extended into the subcortical white substance. The caudate and lenticular nuclei were entirely destroyed and there remained only a small part of the optic thalmi. There was an extensive endarteritis of all the cerebral vessels.

8. E. M. Admitted February 24, 1914, age 28; occupation, photographer; admitted syphilis; onset of psychosis, about two months previous to date of admission.

*Physical Status.*—Very poorly nourished; pupils equal and stationary; very slight tremors of facial muscles; exaggerated reflexes; slurring speech, and marked Romberg.

*Mental Status.*—Memory impaired for past and recent events; marked exaltation and euphoria; grandiose ideas; very noisy, and had no insight into his condition.

This patient received three complete treatments with salvarsan. The cell content of the cerebro-spinal fluid was reduced from 40 to 10 cells per cm. The Wassermann reaction with the blood and cerebro-spinal fluid remained positive throughout and the globulin content of the latter remained above normal.

Four months after the last treatment he began to show considerable improvement in his condition. He became quiet and rational and was able to do considerable work around the ward. He was able to carry on a coherent conversation and had a good insight into his previous condition. Memory improved. He was discharged five months after the last treatment was given.

9. C. A. Admitted November 13, 1913, age 40; occupation, laborer; syphilis denied; onset of psychosis, some weeks previous to date of admission.

*Physical Status.*—Fairly well nourished; pupils stationary and equal; tremors of facial muscles and tongue; slurring speech; marked Romberg, and ataxic gait.

*Mental Status.*—Memory impaired; was dull, stupid, unstable and depressed; sensorium blunted, and had no insight into his condition.

This patient received five complete treatments with salvarsan. The cell content of the cerebro-spinal fluid was reduced from 113 to eight cells per cm. The last Wassermann reaction with the blood was negative. The cerebro-spinal fluid gave a positive Wassermann reaction throughout the course of treatment.

He gradually became weaker, developed convulsions and died one week after last treatment. Permission for autopsy not granted.

10. J. B. Admitted May 21, 1913, age 43; occupation, machinist; chancre 12 years ago; onset of psychosis, six weeks previous to date of admission.

*Physical Status.*—Fairly well nourished; pupils unequal and react sluggishly; tremors of tongue, facial muscles and hands; slurring speech, and marked Romberg.

*Mental Status.*—Memory good; marked euphoria; expansive and grandiose ideas; had fair insight into his condition.

This patient received eight complete treatments with salvarsan and neosalvarsan. The cell content of the spinal fluid was reduced from 56 to 12.2 cells per cm. The Wassermann reaction with the blood serum remained positive throughout the course of treatment, but was reduced to negative with the cerebro-spinal fluid, which became positive later. The globulin content remained above normal.

After three treatments his euphoria and grandiose ideas disappeared. He gained a few pounds in weight and assumed a more healthy color. He became anxious to continue treatment, so he could "get well and go home." Was able to do work which

required considerable skill. Tremors of muscles improved somewhat.

Nine months have elapsed since last treatment and he is regressing very slowly, both mentally and physically.

11. F. C. Admitted March 26, 1914, age 27; occupation, bartender; chancre 10 years ago; onset of psychosis, five days (?) previous to date of admission.

*Physical Status.*—Nutrition fair; pupils unequal and stationary; tremors of tongue, facial muscles and extended fingers; reflexes exaggerated, and marked Romberg.

*Mental Status.*—Memory impaired; was excited and profane; sensorium keen; conversation, incoherent; marked euphoria and grandiose ideas; had no insight into his condition.

This patient received three complete treatments with salvarsan. The cell content of the cerebro-spinal fluid was reduced from 80.1 to 13.1 cells per cm. The Wassermann reaction with the blood and cerebro-spinal fluid remained positive and the globulin content of the latter remained above normal.

Immediately following the treatment he became quite quiet and had a fair insight into his condition, but one week after last treatment he became very excited and destructive, so that it became necessary to place him on a violent ward, where he remained until taken to a private sanatorium, December 15, 1914.

His nutrition was greatly improved and his mental condition was the same as when admitted.

12. R. C. Admitted July 12, 1913, age 35; occupation, police officer; chancre nine years ago; onset of psychosis, eight weeks previous to date of admission.

*Physical Status.*—Nutrition fair; pupils equal and react to distance, but not to light; tremors of facial muscles and extended fingers; slurring speech, and ataxic gait.

*Mental Status.*—Memory impaired; expansive and grandiose ideas; impulsive, restless and hypochondriacal delusions; had no insight into his condition.

This patient received seven complete treatments with salvarsan and neosalvarsan. The cell content of the cerebro-spinal fluid was reduced from 36.2 to 10 cells per cm. The Wassermann reaction with the blood and the cerebro-spinal fluid shifted between negative and four plus. The globulin content of the latter remained above normal.

There has been no improvement in his mental condition; he is irritable at times, but spends the greater part of his time sitting about the ward and talking and laughing to himself. He has no insight into his condition.

He has put on considerable weight and has a very healthy appearance.

13. C. K. Admitted June 12, 1914, age 45; occupation, broker; chancer 14 years ago; onset of psychosis, about one week previous to date of admission.

*Physical Status.*—Poorly nourished; pupils stationary; slurring speech; tremors of tongue; ataxic gait, and marked Romberg.

*Mental Status.*—Excited and violent; exalted; memory poor; had hallucinations, illusions and delusions; claimed he represented Deity.

This patient received six complete treatments with salvarsan and neosalvarsan. The cell content of cerebro-spinal fluid was quite irregular. The Wassermann reaction with the blood remained positive throughout the course of treatment, and with the cerebro-spinal fluid it changed from two plus to four plus. The globulin content remained above normal.

He gained 25 pounds in weight, but there has been no change in his mental condition. He has delusions and hallucinations and is very tremulous. He has no insight into his condition.

14. J. W. Admitted May 25, 1914, age 33; occupation, car inspector; chancer 15 years ago; onset of psychosis, five months previous to date of admission.

*Physical Status.*—Very anæmic and poorly nourished; pupils equal and react readily; very marked tremors of tongue, facial muscles and extended fingers; speech very slurring, making it difficult to understand him; gait is very ataxic and he could scarcely walk without assistance; exaggerated reflexes.

*Mental Status.*—Memory quite good; marked euphoria and ideas bordering on the grandiose type; had some insight into his condition.

This patient received five treatments with salvarsan and bichloride of mercury. The cell content of the cerebro-spinal fluid was reduced from 89.2 to six cells per cm. The Wassermann reaction with the blood and cerebro-spinal fluid remained positive throughout the course of treatment. The globulin content remained above normal.

## TREATMENTS AND BIO-CHEMICAL FINDINGS.

### 1. F. R.

| Date. | W. R. Blood. | C.-Spinal Fluid. | | | Medicinal Agent. | Intravenous Dose. | Intraspinous Treatment. | |
|---|---|---|---|---|---|---|---|---|
| | | W. R. | Glob. | Cells. | | | Amt. | Serum. |
| | | | | | | *gm.* | *cc.* | % |
| Dec. 4, '13. | ++++ | ++++ | + | 40 | Neosalvarsan. | .45 | 30 | 40 |
| Dec. 17, '13. | ++++ | ++++ | .... | .... | " | .45 | 30 | 40 |
| Dec. 29, '13. | ++++ | ++++ | + | 35 | " | .45 | 30 | 40 |
| Jan. 15, '14. | +++ | ++++ | .... | .... | " | .45 | 30 | 40 |
| Jan. 29, '14. | ++++ | ++++ | + | 14.2 | " | .9 | 30 | 40 |
| Feb. 18, '14. | ++++ | ++++ | + | 3.2 | " | .9 | 40 | 50 |
| Mar. 9, '14. | ++++ | ++++ | + | 28.2 | " | .45 | 30 | 40 |
| Mar. 18, '14. | ++++ | ++++ | + | 13 | " | .45 | 30 | 40 |
| Apr. 1, '14. | ++++ | ++++ | + | 52 | " | .9 | 30 | 40 |
| Apr. 30, '14. | ++++ | ..... | .... | .... | ..... | .... | .... | .... |
| May 20, '14. | ++ | ..... | .... | .... | ..... | .... | .... | .... |
| Oct. 21, '14. | +++ | ..... | .... | .... | ..... | .... | .... | .... |
| Dec. 28, '14. | — | ++++ | Blood | cells. | ..... | .... | .... | .... |

### 2. E. K.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dec. 4, '13. | ++++ | ++++ | + | 39 | Neosalvarsan. | .45 | 30 | 40 |
| Dec. 17, '13. | ++++ | ++++ | .... | .... | " | .45 | 30 | 40 |
| Jan. 1, '14. | ++++ | ++++ | + | 30 | " | .45 | 30 | 40 |
| Jan. 15, '14. | ++++ | ++++ | + | 31 | " | .45 | 30 | 40 |
| Jan. 29, '14. | ++++ | ++++ | + | 42 | " | .9 | 30 | 40 |
| Feb. 8, '14. | ++++ | ++++ | + | 7 | " | .9 | 40 | 50 |
| Mar. 9, '14. | ++++ | ..... | .... | .... | ..... | .... | .... | .... |
| Mar. 16, '14. | ..... | ++++ | + | 11.1 | ..... | .... | .... | .... |
| Apr. 20, '14. | ++++ | ++++ | + | 15 | ..... | .... | .... | .... |
| July, 4, '14. | ++++ | ..... | .... | .... | ..... | .... | .... | .... |

### 3. J. T.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Jan. 15, '14. | ++ | ++++ | + | 114 | Neosalvarsan. | .45 | 30 | 40 |
| Jan. 29, '14. | ++ | ++++ | + | 60 | " | .45 | 30 | 40 |
| Feb. 12, '14. | ++ | ++ | + | 50 | " | .45 | 30 | 40 |
| Mar. 4, '14. | ++++ | +++ | + | 10 | " | .45 | 30 | 40 |
| Mar. 18, '14. | +++ | ..... | Blood | cells. | " | .45 | 30 | 40 |
| Apr. 1, '14. | ++++ | +++ | + | 17 | " | .9 | 40 | 50 |
| May 20, '14. | ++++ | ++++ | + | 16 | " | .9 | 40 | 50 |
| Dec. 28, '14. | ++++ | ++++ | + | 5.1 | ..... | .... | .... | .... |

### 4. M. G.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Jan. 26, '14. | ++++ | ++++ | + | 37 | Neosalvarsan. | .45 | 30 | 40 |
| Feb. 6, '14. | ++++ | ++++ | + | 28.2 | " | .45 | 30 | 40 |
| Mar. 7, '14. | ++++ | ++++ | + | 7.2 | " | .45 | 30 | 40 |
| Mar. 21, '14. | ++++ | ++++ | Blood | cells. | " | .45 | 30 | 40 |
| Dec. 28, '14. | ++++ | ++++ | + | 17.1 | ..... | .... | .... | .... |

5. L. W.

| Date. | W. R. Blood. | C.-Spinal Fluid. | | | Medicinal Agent. | Intravenous Dose. | Intraspinous Treatment. | |
|---|---|---|---|---|---|---|---|---|
| | | W. R. | Glob. | Cells. | | | Amt. | Serum. |
| | | | | | | gm. | cc. | % |
| Feb. 6, '14. | ++++ | ++++ | + | 52 | Neosalvarsan. | .45 | 40 | 50 |
| Mar. 7, '14. | ++++ | ++++ | + | 18 | " | .45 | 40 | 50 |
| Mar. 21, '14. | ++++ | ++ | + | 9 | " | .45 | 30 | 40 |
| Mar. 30, '14. | ++++ | — | + | 5 | Salvarsan. | .6 | 30 | 40 |
| Apr. 4, '14. | ++++ | — | + | 6.1 | " | .6 | 30 | 40 |
| Apr. 28, '14. | ++++ | ..... | .... | .... | ..... | .... | .... | .... |

6. F. H.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Feb. 24, '14. | ++++ | ++++ | Blood | cells. | Neosalvarsan. | .45 | 25 | 40 |
| Mar. 12, '14. | ++++ | ++++ | + | 9 | " | .45 | 30 | 40 |
| Mar. 27, '14. | ++++ | ++++ | .... | .... | " | .45 | 35 | 40 |
| Apr. 16, '14. | ..... | ++++ | .... | .... | Salvarsan. | .3 | 40 | 40 |
| June 3, '14. | — | + | .... | .... | " | .6 | 30 | 50 |
| Dec. 28, '14. | ++++ | — | + | 4 | ..... | .... | .... | .... |

The first and third treatments were given intracranially.

7. A. D.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 4, '14. | ++++ | ++++ | + | 80.1 | Salvarsan. | .3 | 30 | 40 |
| Mar. 16, '14. | ++++ | ++++ | + | 19 | " | .3 | 30 | 40 |
| Apr. 1, '14. | ++++ | ++++ | + | 14.2 | " | .3 | 30 | 40 |
| Apr. 20, '14. | ++++ | ++++ | + | 11.2 | " | .3 | 30 | 40 |
| May 6, '14. | ++++ | ++++ | + | 29.2 | " | .6 | 30 | 40 |

8. E. M.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 4, '14. | ++++ | ++++ | + | 40 | Salvarsan. | .3 | 30 | 40 |
| Mar. 16, '14. | ++++ | ++++ | + | 18 | " | .3 | 30 | 40 |
| Apr. 1, '14. | ++++ | ++++ | + | 10 | " | .3 | 30 | 40 |
| Apr. 20, '14. | ++++ | ..... | .... | .... | ..... | .... | .... | .... |
| Aug. 31, '14 | ++++ | ..... | .... | ... | ..... | .... | .... | .... |

9. C. A.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 18, '14. | ++++ | ++++ | + | 113 | Salvarsan. | .3 | 30 | 40 |
| Apr. 1, '14. | ++ | ++++ | + | 98.2 | " | .3 | 30 | 40 |
| Apr 20, '14. | +++ | ..... | .... | .... | ..... | .... | .... | .... |
| May 6, '14. | +++ | +++ | + | 61.2 | Salvarsan. | .3 | 30 | 40 |
| May 18, '14. | ..... | ++++ | + | 27.1 | " | .6 | 40 | 50 |
| June 3, '14. | — | ++++ | + | 8 | " | .6 | 40 | 50 |

10. J. B.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Apr. 9, '14. | ++++ | ++++ | + | 56 | Salvarsan. | .3 | 30 | 50 |
| Apr. 20, '14. | ++++ | ++++ | .... | .... | " | .6 | 30 | 40 |
| May 6, '14. | ++++ | ++++ | + | 11.2 | " | .6 | 30 | 50 |
| May 18, '14. | ..... | ++++ | + | 14 | " | .6 | 40 | 50 |
| June 3, '14. | ++++ | ++++ | + | 6.2 | " | .6 | 40 | 50 |
| June 17, '14. | ++++ | — | + | 9.2 | " | .6 | 40 | 50 |
| July 13, '14. | ++++ | ++ | .... | .... | " | .6 | 40 | 50 |
| July 27, '14. | ++++ | ++++ | .... | .... | Neosalvarsan. | .9 | 50 | 50 |
| Oct. 21, '14. | ++++ | ..... | .... | .... | ..... | .... | .... | .... |
| Dec. 28, '14. | ++++ | ++++ | + | 12.2 | ..... | .... | .... | .... |

11. F. C.

| Date. | W. R. Blood. | C.-Spinal Fluid. | | | Medicinal Agent. | Intravenous Dose. | Intraspinous Treatment. | |
|---|---|---|---|---|---|---|---|---|
| | | W. R. | Glob. | Cells. | | | Amt. | Serum. |
| | | | | | | *gm.* | *cc.* | % |
| June 3, '14. | ++++ | ++++ | + | 80.1 | Salvarsan. | .6 | 30 | 40 |
| June 17, '14. | ++++ | ++++ | + | 13.1 | " | .6 | 30 | 40 |
| July 10, '14. | ++++ | ++++ | + | 12 | " | .6 | 30 | 40 |

12. R. C.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 1, '14. | ++++ | — | + | 36.2 | Neosalvarsan. | .9 | 30 | 40 |
| July 13, '14. | + | — | + | 24.2 | Salvarsan. | .6 | 30 | 40 |
| July 27, '14. | ..... | ..... | + | 11.1 | " | .6 | 30 | 40 |
| Dec. 28, '14. | ++++ | ++++ | + | 15.1 | ..... | .... | .... | .... |
| Mar. 17, '15. | ..... | ++++ | + | 10.1 | Salvarsan. | .6 | 35 | 40 |
| Mar. 30, '15. | ++++ | ++++ | + | 9.2 | " | .6 | 35 | 50 |
| Apr. 12, '15. | ..... | ..... | + | 10 | " | .6 | 35 | 50 |
| Apr. 28, '15. | ..... | ..... | Blood cells. | | " | .6 | 35 | 50 |

13. C. K.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| July 13, '14. | ++++ | ++ | Blood cells. | | Neosalvarsan. | .9 | 30 | 40 |
| July 27, '14. | ++++ | ++ | + | 16 | " | .9 | 30 | 40 |
| Oct. 31, '14. | ++++ | ..... | .... | .... | ..... | .... | .... | .... |
| Dec. 28, '14. | ++++ | ++++ | + | 32 | ..... | .... | .... | .... |
| Mar. 17, '15. | ..... | ++++ | + | 11.2 | Salvarsan. | .6 | 35 | 40 |
| Mar. 30, '15. | ++++ | ++++ | Blood cells. | | " | .6 | 35 | 50 |
| Apr. 12, '15. | ++++ | — | + | 27.2 | " | .6 | 35 | 50 |
| Apr. 28, '15. | ..... | ..... | + | 5.2 | " | .6 | 25 | 50 |

14. J. W.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 8, '15. | ++++ | ++++ | + | 89.2 | Salvarsan. | .6 | 40 | 50 |
| Mar. 15, '15. | ..... | ++++ | + | 14.1 | Corrosive Sublimate. | .... | *gm.* .0013 | *cc.* 50 |
| | | | | | | | *cc.* | % |
| Mar. 30, '15. | ++++ | ++++ | + | 17.1 | Salvarsan. | .6 | 35 | 50 |
| Apr. 12, '15. | ++++ | ++++ | + | 12.1 | " | .6 | 35 | 50 |
| Apr. 28, '15. | ..... | ..... | + | 6 | " | .6 | 35 | 50 |

15. F. H.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mar. 17, '15. | ++++ | ++++ | + | 49 | Salvarsan. | .6 | 35 | 40 |
| Mar. 30, '15. | ++++ | ++++ | Blood cells. | | " | .6 | 35 | 50 |
| Apr. 12, '15. | ++++ | — | + | 24 | " | .6 | 35 | 50 |
| Apr. 28, '15. | ..... | ..... | + | 8.1 | " | .6 | 35 | 50 |

As yet there has been no change in his mental and very little in his physical condition. He has gained two pounds in weight and he can walk somewhat better than formerly.

15. F. H. Admitted February 25, 1915, age 48; occupation, stationary engineer; denied syphilis; onset of psychosis, six months previous to date of admission.

*Physical Status.*—Well nourished; pupils equal, contracted and stationary; tremors of tongue, facial muscles and extended fingers; ataxic gait; slight slurring speech.

*Mental Status.*—Memory fairly good; somewhat exalted, grandiose ideas; oriented for time and place, and had poor insight into his condition.

This patient received four treatments with salvarsan. The cell content of the cerebro-spinal fluid was reduced from 49 to 8.1 cells per cm. The Wassermann reaction with the blood remained positive throughout the course of treatment, but it was reduced to negative with the spinal fluid. The globulin content of the latter remained above normal.

After receiving two treatments, he had 14 convulsions in six days and since that time he has been very delusional. He has lost two pounds in weight.

## WASSERMANN REACTIONS FOLLOWING TREATMENTS.

In our series of cases we were unable to obtain a persistent negative Wassermann reaction, either with the blood or the cerebro-spinal fluid. Some cases would give a weakly positive or negative reaction for a short time, but they always returned to positive.

It is well known that any case of paresis may give a positive reaction one day and a negative the next. A negative reaction may even persist for two or three months without any improvement whatever in the patient's condition.

## CELL CONTENT OF THE SPINAL FLUID.

Some doubt exists as to the origin of the cells found in the cerebro-spinal fluid in cases of cerebro-spinal syphilis. Some observers believe that they are derived from the fixed tissue cells, but generally now it is accepted that they come from the blood, the

plasma cell being a stage in the process of degeneration of the lymphocyte.

The presence of these cells in the cerebro-spinal fluid, if they are in excess of the normal numbers, signifies an inflammatory process of some part of the meninges covering the central nervous system.

The reduction in the number of cells, following intraspinous treatments, seems to have little or no significance. A repeated lumbar puncture will in most cases reduce the cell count to normal, but there are some cases in which this procedure does not affect the cell count at all, in fact, has quite the opposite effect.

The fluctuations in the cell count, following repreated lumbar punctures, correspond very well with the course taken by them after intraspinous treatments.

In an article written by Mitchell, Darling and Newcomb are given the variations in the cell count in untreated cases. Some of their cases show a very great increase in the number of cells, while others show a steady decrease. We have never been able to obtain so great a variation in our cases, but the changes which may take place from time to time are demonstrated very well.

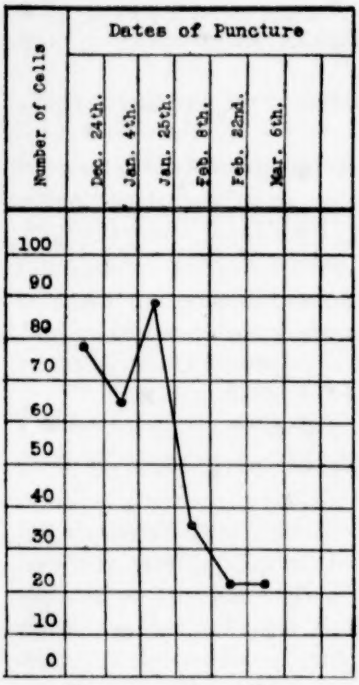
The following charts illustrate the changes which we have observed in the cell content of the cerebro-spinal fluid of some of our patients after repeated lumbar punctures and intraspinous treatments.

## NUTRITIONAL CHANGES.

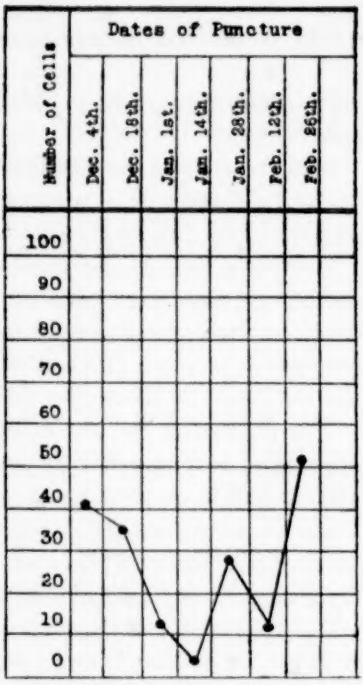
The improvement in nutrition, which is observed in so many cases, can be readily attributed to the tonic effect of the arsenic. It is reported by Wechselmann that cases treated with salvarsan invaribly show this improvement independent of any change in the course of the disease.

## THE DISTRIBUTION OF THE SALVARSANIZED SERUM OVER THE SURFACE OF THE BRAIN.

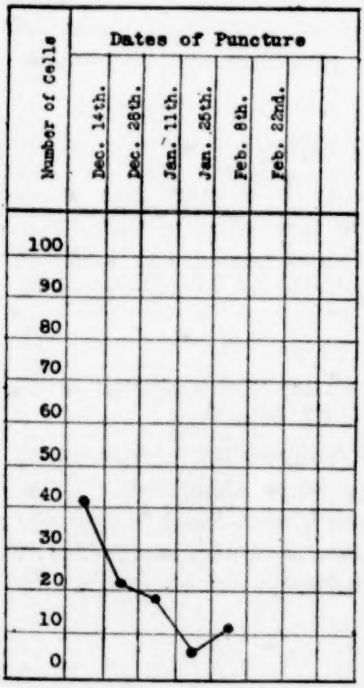
There is very little doubt about the salvarsanized serum reaching the convexities of the hemispheres, when administered by the intraspinous route. When the serum is introduced beneath the cerebral dura or directly into the lateral ventricles it immediately reaches the place for which it is intended, but it is a long and diffi-



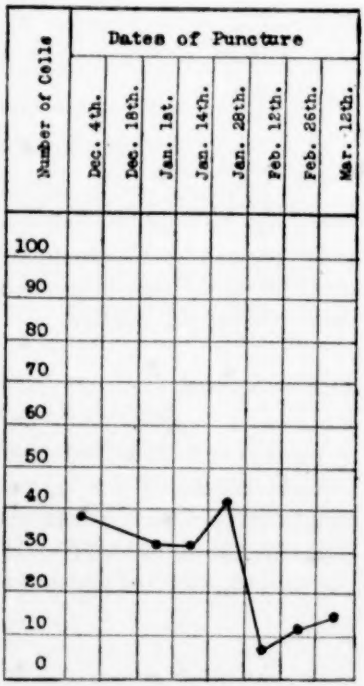

UNTREATED CASE NO. 1.



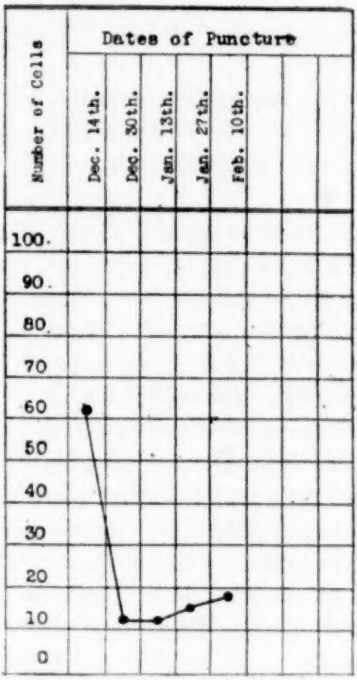

TREATED CASE NO. 1.



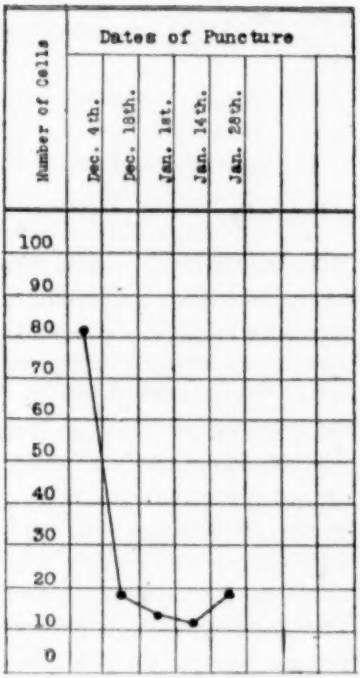

UNTREATED CASE NO. 2.



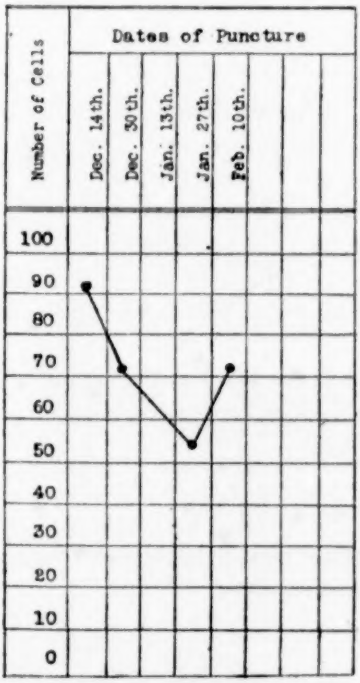

TREATED CASE NO. 2.



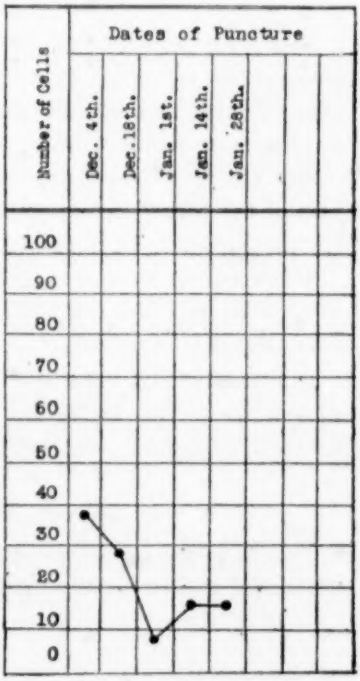

UNTREATED CASE NO. 3.




TREATED CASE NO. 3.




UNTREATED CASE NO. 4.




TREATED CASE NO. 4.

cult operation when compared with the intraspinous method, and does not seem to have any advantages over the latter, which will give the same results if a little pressure is exerted when giving the injections.

The investigations of Weed make this point quite clear. He demonstrated that when ferrocyanide solutions are injected into the spinal arachnoid cavity and continued for one hour under a pressure slightly above normal (120 to 180 mm. of water), the granules are found in the basilar cisternæ, but very few are found over the convexities of the hemispheres. The same results are obtained by withdrawing the cerebro-spinal fluid and injecting an equal amount of ferrocyanide solution. If the injections are continued for several hours the granules are equally distributed over the entire cerebral subarachnoid space, and 10 cubic centimeters injected under pressure will give the same results. Therefore, when an intraspinous treatment of 30 to 40 cubic centimeters is given under moderate pressure, there is little doubt as to its reaching the convexities of the hemispheres.

## EFFICIENCY OF THE TREATMENT.

The great imperfection of this method seems to lie in the small quantity of salvarsan given and in the long intervals that must elapse between its administrations. A larger dose of salvarsan is too irritating and cannot be borne by the patient, and if the treatments are given at shorter intervals one is simply withdrawing a part of the serum last injected, because it takes nearly two weeks for the serum to be absorbed from the spinal arachnoid space.

The spirochætes that survive the first dose have an opportunity to multiply and continue their work of destruction before the next treatment can be given.

A patient with a very small lesion in the brain at the beginning of a series of treatments will have a much larger one before the invading organisms are finally killed off.

## SUMMARY AND CONCLUSIONS.

The largest number of intraspinous treatments given to one individual was 10 and the smallest number three.

Three of these patients showed mental and physical improvement; five showed physical improvement only; two died during the course of treatment; two died 10 and 13 months, respectively, after treatments were discontinued; the remainder showed no improvement whatever.

Of the three who showed mental and physical improvement one was discharged and still remains in good physical and mental condition, having "returned to work and received a substantial raise in salary," over 14 months having elapsed since last treatment. One showed the first signs of improvement three months after receiving last treatment. He was taken home by his friends and we have lost track of him. The third died with convulsions 10 months after treatment.

The number of treatments which we have given to each patient was insufficient to reduce the intensity of the Wassermann reaction either with the blood or the cerebro-spinal fluid. The negative reactions we have obtained may be seen in almost any case of untreated paresis.

The number of cells in the cerebro-spinal fluid change with each lumbar puncture independent of any medicinal agent. It is generally reduced to a greater or less extent, but in some instances it may be increased and the changes in the number of cells, following intraspinous treatments, are the same as those following lumbar puncture without treatment.

The improvements which we have observed following our treatments may be seen among the same number of paretics who have received no special treatment.

The number of treatments we have given are insufficient to control the course of the disease in patients who are as far advanced as they usually are when admitted to institutions for the insane.

We believe that the amount of salvarsan which can be introduced safely into the central nervous system is too small, and the intervals are too long between the treatments, to be of any great value in moderately advanced cases.

The intracranial method seems to be unnecessary. The same results can be obtained with the intraspinous method.

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# THE INTRA-CRANIAL INJECTION OF SALVARSANIZED SERUM.*

By DREW M. WARDNER, M. D.,
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Laying aside as foreign to the purposes of this paper any consideration of well-known past or present methods of treating general paresis, I will proceed at once to the presentation of the subdural injection of salvarsanized serum in the treatment of this condition. The first suggestion as to the possible efficacy of treating general paresis sub-durally with some form of salvarsanized serum seems to have come from Levaditi and Martel of Paris, in December, 1913. Later on, in the *Bulletin de la Société de Médicine Mentale*, they describe their technic of the method, and report the results of treatment in ten cases. Their procedure is to salvarsanize a rabbit *in vitro*, and after bleeding to inject 5 cc. of the serum obtained through a trephine hole bored in the anterior temporal region of the skull. They claim marked improvement, both mental and physical, in all ten cases and signify their intention of continuing the treatment.

Although we owe our inspiration to their suggestion our technique differs widely. In a paper presented before this society at its Baltimore meeting last year we discussed the rationale of the subdural method and our reason for undertaking it; this including necessarily the results of other methods, such as intraspinous, intraventricular, etc., so it is not necessary to go into these again here. A brief résumé of the technic of our method is, however, in order.

On the day previous to operation the patient is given a full dose of salvarsan intravenously. The blood drawn from the patient's arm is prepared according to the well-known Swift and Ellis procedure. At operation the patient is given an ether anesthetic, a small skin flap is turned back in the anterior temporal region well above the ear and a trephine hole about 1 cm. in diameter bored in the skull by means of a Hudson drill. A lumbar puncture is then

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Laying aside as foreign to the purposes of this paper any consideration of well-known past or present methods of treating general paresis, I will proceed at once to the presentation of the subdural injection of salvarsanized serum in the treatment of this condition. The first suggestion as to the possible efficacy of treating general paresis sub-durally with some form of salvarsanized serum seems to have come from Levaditi and Martel of Paris, in December, 1913. Later on, in the *Bulletin de la Société de Médicine Mentale*, they describe their technic of the method, and report the results of treatment in ten cases. Their procedure is to salvarsanize a rabbit *in vitro*, and after bleeding to inject 5 cc. of the serum obtained through a trephine hole bored in the anterior temporal region of the skull. They claim marked improvement, both mental and physical, in all ten cases and signify their intention of continuing the treatment.

Although we owe our inspiration to their suggestion our technique differs widely. In a paper presented before this society at its Baltimore meeting last year we discussed the rationale of the subdural method and our reason for undertaking it; this including necessarily the results of other methods, such as intraspinous, intraventricular, etc., so it is not necessary to go into these again here. A brief résumé of the technic of our method is, however, in order.

On the day previous to operation the patient is given a full dose of salvarsan intravenously. The blood drawn from the patient's arm is prepared according to the well-known Swift and Ellis procedure. At operation the patient is given an ether anesthetic, a small skin flap is turned back in the anterior temporal region well above the ear and a trephine hole about 1 cm. in diameter bored in the skull by means of a Hudson drill. A lumbar puncture is then

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made and about 30 to 40 cc. of spinal fluid withdrawn. A bent salvarsan needle is then carefully pushed through the dura and 40 to 50 cc. of the serum allowed to flow in by gravity. After two weeks the procedure is repeated upon the opposite side. Subsequent applications are made at intervals of two weeks, the same trephine hole being used for the injection of the fluid.

A year ago we were able to make a preliminary report upon six cases treated in this way. At the present writing the series has been increased to 14, each individual of which has had from four to 12 treatments.

CASE I.—Age, 33; duration of disease one year. Grandiose ideas marked. Judgment defect marked. No insight. Pupillary abnormalities present. K. J. exaggerated. Blood Wassermann, 4 plus; spinal fluid Wassermann, 4 plus; cells, 82.5 per cm.; R. J., 4 plus. (Six treatments.) *Present Status:* Patient is normal mentally. Insight perfect. Has gone back to his occupation as druggist. On leaving the hospital the Wassermann reaction in the blood was minus; spinal fluid Wassermann, 2 plus; cell count, zero; R. J., 2 plus. Patient has been normal for seven months.

CASE II.—Age, 45; duration of disease, 18 months. Grandiose ideas. Moderate judgment defect. Moral defect very marked. K. J. increased. Pupillary disturbances very marked. No abnormal reflexes. Coordination very poor. Blood Wassermann, 2 plus; spinal fluid Wassermann, 4 plus; cells, 10 per cm.; R. J., 4 plus. (Six treatments.) *Present Status:* Judgment good; insight good. Has gone back to his occupation as laundryman. Blood Wassermann, minus; spinal fluid Wassermann, 4 plus; cells, 3.5 per cm., R. J., 1 plus. Has been well for seven months.

CASE III.—Age, 40; duration of disease, three months. Moderate elation. Marked indifference to social obligations; disoriented; no insight. Pupillary disturbances. K. J. exaggerated. Coordination poor. Blood Wassermann, minus; spinal fluid Wassermann, 3 plus; cells, 39.5 per cm.; R. J., 2 plus. (Six treatments.) *Present Status:* Normal emotional tone. Sense of responsibility good. Insight good. Has gone home and is working at his occupation as tanner. Blood Wassermann, minus; spinal fluid Wassermann, minus; cells, 1 per cm.; R. J., 2 plus. Has been well for six months.

CASE IV.—Age, 33; duration of disease, two years. Had a fair remission in 1913 with impaired judgment and no insight. Second admission, April, 1914. Convulsions, stuporous; marked emaciation and muscular paresis. Blood Wassermann, 3 plus; spinal fluid Wassermann, 2 plus; cells, 83.5 per cm., R. J., 4 plus. (Six treatments.) *Present Status:* Normal mentally, robust and active. Has gone back to his former occupation as salesman for an electric company. Blood Wassermann, minus; spinal fluid Wassermann, 1 plus; cells, 2 per cm.; R. J., minus. Has been well for nine months.

CASE V.—Age, 48; duration of disease, three weeks. Grandiose ideas marked. Disoriented and confused. Pupillary disturbances. Increased K. J. Coordination poor. Wassermann in blood, 4 plus; spinal fluid Wassermann, 4 plus; cells, 2.5 per cm.; R. J., 4 plus. (Six treatments.) Patient returned to normal mentality. Remained well for five months. Sudden right-sided convulsions of unknown origin. Died. *Autopsy:* Gross and microscopical changes suggesting paresis. No spirochæte found. A large cyst, apparently of long standing, found under left motor area. At time of death, blood Wassermann, 2 plus; spinal fluid Wassermann, 4 plus; cells, negative; R. J., 3 plus.

CASE VI.—Age, 35; duration of disease, one year. Apparently marked dementia. Delusions of grandeur marked. Muscular paresis marked. Pupillary disturbances present. Increased K. J. Coordination very poor. Blood Wassermann, 2 plus; spinal fluid Wassermann, 4 plus; cells, 109 per cm.; R. J., 4 plus. (Seven treatments.) Patient practically normal for 11 months and was allowed home. Bad relapse after one month and was brought back to the hospital. Patient was again put under treatment and showed immediate response. After five additional treatments he is practically normal again. Blood Wassermann, 4 plus; spinal fluid Wassermann, 4 plus; cells, negative; R. J., 4 plus.

CASE VII.—Age, 47; duration of disease, two years. Delusions of grandeur very marked. Marked deterioration of judgment and moral sense. Confused, noisy and emaciated. Pupillary disturbances present. Increased K. J. Blood Wassermann, 2 plus; spinal fluid Wassermann, 4 plus; cells 3.5 per cm.; R. J., 4 plus. (Four treatments.) The patient responded well to treatment and became quiet and tractable. Physical improvement was marked. Broncho-pneumonia after three months. Died. *Autopsy:* Broncho-pneumonia; gross and microscopical changes indicating paresis. At time of death, blood Wassermann, minus; spinal fluid Wassermann, 1 plus; cells, negative; R. J., 2 plus.

CASE VIII.—Age, 40; duration of disease, two years. Delusions, none. Loss of memory for recent events very marked. Loss of acquired knowledge very marked. Speech defects marked. Coordination poor. Patient has has several intraspinous treatments before coming to this hospital without effect. On admission, blood Wassermann, 4 plus; spinal fluid Wassermann, 3 plus; cells, 12 per cm.; R. J., 4 plus. (Six treatments.) *Present Status:* Patient's mentality is practically normal. He is active, interested in his surroundings and has good insight into his condition. The speech defect is very much improved. Patient has parole of the grounds. Blood Wassermann, 3 plus; spinal fluid Wassermann, 1 plus; cells, 12 per cm.; R. J., 4 plus.

CASE IX.—Age, 30; duration of disease, six months. Silly, talkative, disoriented and confused. Memory for recent events very poor. Has had several intraspinous treatments before admission. Blood Wassermann,

minus; spinal fluid Wassermann, 4 plus; cells, 7 per cm.; R. J., 4 plus. (Five treatments.) *Present Status:* Judgment is still poor and is rather silly. Great improvement in memory for recent events. There are no further chemical or biological findings.

CASE X.—Age, 47; duration of disease, three months. Moderately exalted. Marked lack of judgment and moral sense. Pupillary disturbances present. Coordination poor. Blood Wassermann, 3 plus; spinal fluid Wassermann, 4 plus; cells, 25.5 per cm.; R. J., 4 plus. (Six treatments.) *Present Status:* Memory much improved. Coordination much improved. Not much improvement in judgment or moral sense. Blood Wassermann, 3 plus; spinal fluid Wassermann, 4 plus; cells, negative.

CASE XI.—Age, 53; duration of disease, two years. At time of treatment patient was bed-ridden, unable to talk or help himself in any way. Blood Wassermann, 3 plus; spinal fluid Wassermann, 4 plus; cells, 30 per cm., R. J., 4 plus. (Four treatments.) Patient became able to talk a little and to feed himself. No further change. Blood Wassermann, 3 plus; spinal fluid Wassermann, 4 plus.

CASE XII.—Age, 34; duration of disease, two years. Disoriented and confused. Marked delusions of grandeur. Marked muscular paresis. Pupillary disturbances. Marked incoordination. Blood Wassermann, 4 plus; spinal fluid Wassermann, 4 plus; cells, 11 per cm.; R. J., 1 plus. (Five treatments.) *Present Status:* Fair improvement mentally and physically. Well oriented. Takes an interest in his surroundings. Blood Wassermann, 2 plus; spinal fluid Wassermann, 4 plus; cells, not taken; R. J., 1 plus.

CASE XIII.—Age, 35; duration of disease, four years. Disoriented, demented and silly. Marked muscular paresis. Pupillary disturbances. Coordination poor. Speech defect marked. Wassermann, in blood, doubtful; spinal fluid Wassermann, 2 plus; cells, 5.5 per cm.; R. J., 2 plus. (Four treatments.) No improvement. No further chemical or biological findings.

CASE XIV.—Age, 40; duration of disease one year. Disoriented; confused. Delusions of grandeur very marked. Coordination very poor. Speech defect marked. Pupillary disturbances present. No chemical or biological findings. (Eight treatments.) *Present Status:* Patient shows a practically normal mentality with good insight into his former condition. Coordination and speech much improved. Blood Wassermann, 3 plus; spinal fluid Wassermann, 4 plus. No further laboratory findings.

To sum up, of the 14 cases, five improved sufficiently to be able to go back to their work and to date have remained well for from seven to 11 months. At the end of 11 months, one of these cases had a bad relapse. He was immediately brought back to the hospital and (we think this a point much in favor of the

efficacy of the treatment) he responded immediately to additional applications of the serum. At present he is well, mentally and physically, and has parole of the grounds. Three other well-developed cases have improved sufficiently to be put upon parole of the grounds and are doing efficient work about the hospital. Three others have shown fairly marked physical and mental improvement but cannot as yet be trusted at large. Two have died. In both of these cases, autopsies were performed and both showed, grossly and microscopically, changes suggestive of general paresis. The immediate cause of death was in one case broncho-pneumonia and in the other, who had right-sided convulsions at intervals, there was found a large cyst underlying the left motor cortex. This last case had previously shown a well-marked improvement and at the time of death was on parole. Two cases have shown no improvement.

Both mental and physical improvement has generally been observed after the second or third operation, and has followed so closely upon the treatment as to practically preclude the idea of coincidence. The maximum amount of improvement has occurred as a rule after six or seven treatments.

That the operation is not dangerous is shown by the fact that 102 have been performed without untoward results in any case. Thirty minutes suffices for the whole procedure and the anesthetic has been well borne in all our cases.

The cases treated were not selected but were taken at random from the admissions of the past two years. Every attempt has been made to exclude psychoses other than general paresis and in every case the clinical diagnoses have been supported by the laboratory findings.

Where pupillary disturbances existed no marked change has been noted after treatment. Reflexes, when previously exaggerated, show a tendency to become less so. Coordination and speech have been improved in all.

In the blood the Wassermann reaction has been rendered negative in six; reduced in intensity in four; unchanged in three, and not taken in one. In the spinal fluid the Wassermann has been rendered negative in two; reduced in six; not retaken in two; unchanged in the rest. The cell count has been reduced to below 10 per cm. in 12; not retaken in two. The Ross-Jones reaction for

globulin has been made negative in one; unchanged in the remainder.

What the final outcome of these cases will be we cannot, of course, state. Our best results have occurred in those in which the manifestation of the disease process had been noticed within a comparatively short time, and in which the actual destruction of brain tissue might reasonably be supposed to be slight. We believe that if cases of general paresis could be diagnosed early and thoroughly treated much might be done to control the future progress of the condition.

# A FURTHER CONTRIBUTION TO THE STUDY OF APHASIA APROPOS OF A CASE OF VERBAL AMNESIA AND ALEXIA.[1]

By ALFRED GORDON, M. D., of Philadelphia.

The anatomo-clinical case about to be described presents several important features bearing on the problem of aphasia. Wernicke's view on transcortical aphasia and Marie's conception on aphasia in general are submitted to a criticism based on the clinical as well as on the pathological data of this and other cases.

H.T., 44 years of age, laborer, presents unimportant family and personal antecedents. No history of syphilis could be elicited and Wassermann test of both serum and spinal fluid was negative. He did not use alcohol or tobacco. In December, 1914, on Christmas Eve, he remembered buying a pair of rubbers and starting home, but no more. He found himself in the Douglass Hospital. Upon examination the next day he presented some mental hebetude. Questions had to be repeated several times before he made an attempt to reply. Finally he mentioned his name and kept on repeating it at each subsequent question. No other word could be obtained from him. The same attitude was observed when the patient was asked to execute acts. When told to put out his tongue, after a long interval he simply opened his mouth. He looked surprised and apparently incapable of appreciating his surroundings. On physical examination no paralysis was present, the knee-jerks were normal, the plantar reflex was normal and pin-prick was apparently perceived by the patient. All sensations were normal all over the body and there was no astereognosis. Eye examination, made by Dr. Appleman, was entirely negative.

The patient soon improved. In two months he left the hospital and resumed his work. After working several weeks he commenced to make mistakes in his work so that his employer was obliged to dismiss him. Upon a second examination the following condition was found.

Patient has difficulty in recalling names of objects. He makes, however, great efforts, perspires freely while trying to recall names. When objects are placed before him and wrong names are given them, he does not accept them until the right name is called. His speech is normal as far as articulation is concerned; his spontaneous speech is comprehensible as far as individual words are concerned. But when he tries to ask questions and tell voluntarily about his own condition, he experiences a difficulty in

[1] Read before the Philadelphia Neurological Society, October 22, 1915.

finding the proper word or words. Instead he may say other words. That he realizes his errors can be seen from the dissatisfaction and impatience which he plainly shows. He promptly tries to correct himself, but does not succeed in finding the proper words. When he is reminded of the latter, he at once accepts them as correct. Very occasionally he finds the correct word, or if he is asked to repeat he does it correctly, but only when he repeats the word at once, as, at a second attempt to do it, he cannot find it in his vocabulary. Occasionally in pronouncing a word he repeats the syllables, but each syllable is pronounced correctly. The test for reading printed letters shows that he had great difficulty in making out syllables, words and letters. He cannot read well even familiar newspaper print nor can he make out well his own writing in letters written by him prior to his illness.

Soon he began to complain of headache. His eyes, reexamined, were again found normal. Suddenly he developed a confusional state in which he mistook persons and objects, accused his friends of trying to do him harm, became very resistive and obstinate. After being kept in bed for a week, the confusional condition cleared up completely. An examination was made ten days later and the following was noticed.

Asked about dates or time of the year, he makes errors. When questioned about ordinary subjects he does not seem to understand at first, but promptly attempts to reply. Then he again shows the same difficulty in finding the proper words as formerly. When, however, the correct word is given, he accepts it at once. When he is asked to execute acts, he does correctly the first part, but is unable to carry out the last part of the order. In trying to carry out a complicated order, such as going first to the right and then to the left, select a certain object and place it in a certain way, the patient makes gross mistakes. When asked several questions in succession, he would sometimes answer the first one correctly but in trying to answer the second, third, etc., he would keep on repeating the reply to the first question. The abovementioned difficulty to read was still present. Now as before he realizes the mistakes he makes, as when corrected he promptly approves. It is interesting to note that in the hospital ward he was found frequently conversing with fellow patients, but according to their statements they cannot always understand him; he stops often, and vainly tries to find the proper words. This difficulty is always greater when he is being questioned.

A third and final examination was made three weeks later and the former condition was found aggravated. Simple mathematical additions are made with great difficulty. First, he cannot repeat easily the problem, and then, when understood, he adds one by one to get the result. When told to take three from five, after several attempts he finally ends with saying none is left. When told to show his right hand he raises the left, then corrects it immediately, but raises his right hand and keeps on saying this is the left. When asked to show his left foot, he raises his right hand. He seems not to comprehend questions; when told to put the left heel

on the right knee, or place an object in a certain part of the room, he seems not to understand.

In his spontaneous conversation the sentences are muddled up; he apparently knows what he wants to say, but is unable to connect the sentence. At this time the eyes began to show changes. Pupils were unequal; right larger than left. They react to light and accomodation. In the right eye the disc edges are blurred, especially upper and lower edge, swelling +2 D. Evidences of infiltration into the retina above and below with small hemorrhages are seen. Veins are broad. In the left eye the disc edges are blurred and swollen all around. Swelling of retinal fibers extends farther into the retina than into the other edge. A week later the swellng of the right disc is +3 D. Small hemorrhages are seen over the swelling. In the left eye the swelling of the disc is +4 D. Small hemorrhages and degenerative areas are seen over its surface. Typical choked disc.

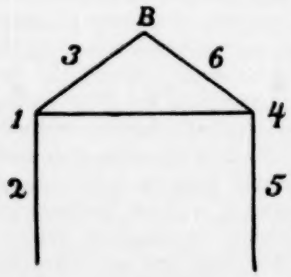
In view of these ocular findings an operation was proposed and promptly accepted. The various manifestations of sensory aphasia which were present in this case and which will be discussed later, pointed to a left-sided neoplasm. Indeed a soft and very vascular mass was found in the temporo-parietal region of the brain. In view of its consistency it could not be removed. An improvement was observed following this decompressive operation from the standpoint of his general mentality. Soon he developed a suppuration in the wound with rise of temperature. For three weeks he remained in a semi-stuporous state and finally expired.

At autopsy a large, soft, vascular tumor was seen in the left hemisphere involving the supramarginal gyrus, angular gyrus and the posterior thirds of the first and second temporal lobes and a very small portion of the occipital lobe. A transverse anter-posterior section reveals the integrity of the insula except perhaps its very posterior border which touches the tumor. The mass extends into the occipital lobe posteriorly and mesially as far as the posterior cornu of the lateral ventricle. The very posterior portion of the internal capsule and the corona radiata are involved by the tumor. The lenticular zone of Marie appears intact. It includes the square area limited anteriorly by the white substance of the third frontal convolution, posteriorly by Wernicke's area, externally by insula, internally by the wall of the third ventricle. The tumor itself is gliomatous in character. It is circumscribed, contrasting strikingly through it consistence and color with the normal tissue. Histologically a large number and densely arranged glia-cells are seen, suggesting a malignant activity. Hemorrhages are seen here and there. Necrotic areas are seen especially at the periphery. Cyst formations are multiple and in their immediate vicinity there is rarefaction of the glia-stroma.

*Comment.*—From the foregoing it can be seen that the mental disorder developed shortly after an apoplectiform attack. The several successive examinations revealed a speech condition which gradually became more and more profound. The most conspicu-

ous manifestation was the difficulty and inability to recall names of objects. That he possessed full understanding of spoken sentences and of objects is evident from his disapproval or approval when wrong and correct names respectively were mentioned. There was evidently no loss of comprehension of the word meanings. The imitative speech (correct repetition of words heard) is greatly preserved here, as when his wrong definitions are corrected he repeats them, fully understanding his mistakes. During the longest period of his illness, he preserved the faculty of hearing and understanding spoken words, and only towards the last weeks of his life did he commence to lose full comprehension of heard conversation. Manifestly word-deafness developed through extension of the pathological process. The inability consequently of spontaneously recalling names of objects and of recalling the proper words for correct expression of his thoughts was the most prominent phenomenon.

Since the imitative speech is preserved, but the spontaneous speech is impaired, we deal here with verbal amnesia or amnesic aphasia. The so-called transcortical aphasia as conceived by Lichtheim and Wernicke consists of integrity of the motor and sensory speech centers and of their connections with each other and the periphery, but one or the other is cut off from the rest of the cortex. This variety of aphasia is characterized principally by the preservation of the faculty of repeating words. If we consider Wernicke's scheme—




1. Cortical sensory aphasia.
2. Subcortical sensory aphasia.
3. Transcortical sensory aphasia.
4. Cortical motor aphasia.
5. Subcortical motor aphasia.
6. Transcortical motor aphasia.

B. Center of ideation.

—one of the components of the transcortical aphasia is cut off from B, center of ideation, in the present case. As the comprehension of words is good, which is seen from the patient's approval or disapproval of words heard, the pathway from 1 to B and from B to 1 must be intact, but the path from B to 4 must be injured. It is therefore a case of motor transcortical aphasia. The imitative

speech was preserved, patient could repeat words and sentences, but the spontaneous speech was impaired, as he could not voluntarily give the proper names of objects. Figuratively speaking, the stimulus from B to 1 was hindered, which corroborates the diagnosis of transcortical motor aphasia. In the later development of the disease the patient's imitative and spontaneous speech both became impaired, which, speaking figuratively, means that the paths from B to 4 and from B to 1, also from 1 to B, were simultaneously involved. In fact, transcortical sensory aphasia is, generally speaking, associated with transcortical motor aphasia. In the present case for a long time apparently only one path was involved.

The patient presented also during his entire illness a loss of faculty of reading. While formerly he was a daily reader of newspapers and could write well, he became unable to recognize his daily morning paper and his own handwriting. He could not write even on dictation. However, there was a peculiarity which deserves special mention. When a printed word was shown to the patient and he was asked to name each letter individually, he could not do it. On the other hand, when for the purpose of testing wrong letters were mentioned, he would not accept them until the right one was given. As soon as the latter was spoken, he at once repeated it by saying, "That is right." The patient consequently presented a condition which in relation to word-blindness was similar to that of his verbal amnesia in relation to word-deafness. This is the so-called "optic aphasia." As an inability to find the right word was present, not only with regard to printed or written matter, but also to objects shown and even touched and handled by the patient, we have to deal here with an optic-tactile aphasia or amnesic aphasia in general, which therefore includes the verbal amnesia discussed above. Similarly to the word-deafness which eventually developed fully, the at first incomplete word-blindness became a true alexia as the disease advanced.

There was still another peculiarity in the sensory aphasia from which the patient suffered. As the disease progressed, he became paraphasic and paragraphic. In talking there was a confusion of words, syllables and letters. He was muddled up in his attempts to repeat words or sentences. Combinations of words were decidedly incorrect and understood but partially, and with all this

he was very talkative. In spontaneous writing or dictation he confused the letters exactly as he did in speech. It was actually impossible to make out any meaning whatever.

Considering the patient's speech in general, there was no motor aphasia. The utterance of words was good, there was no deterioration of the motor speech. The inner speech, as we said above, was intact. There was not the least indication of dysarthria or anarthria. The articulation was clear and distinct. The pronunciation of individual syllables and words was good.

*Criticism of Transcortical Aphasia.*—If in accordance with Wernicke's doctrine in transcortical aphasia the cortical centers (motor and sensory) of speech and their connections with each other and the periphery must be intact, but only the connections with the rest of the cortex, viz., the center of ideation, are interrupted, do we actually find such a state of affairs in the present anatomo-clinical case? Clinically the latter presents what Wernicke described under that name, viz., a variety of aphasia in which the imitative speech alone is preserved, but the spontaneous speech is impaired. Otherwise speaking, the patient can only repeat words and sentences which he hears, but, spontaneously, he cannot recall names of objects in order to make his speech comprehensible. But do we invariably find the anatomical substratum as stipulated by Wernicke? In the present case word-deafness existed only during the last few weeks of the patient's life. For a long time the patient could understand spoken words and could show his disapproval of wrong names applied to objects. The verbal amnesia together with alexia and optic aphasia existed without actual word-deafness. The lesion found at autopsy was very marked and consequently existed a long time. If in transcortical aphasia the speech centers are primarily intact, this was certainly not the case in the present instance. The sensory speech centers, viz., the posterior thirds of the two temporal lobes, the angular gyrus and a part of the occipital lobe were greatly invaded by a soft and vascular mass, and evidently for a very long time. Wernicke's anatomical formula, therefore, is not always in conformity with his original view, and in his schematic presentation of speech centers not only the paths between B and 4 or between 1 and B must be involved, but also the sensory center by itself may produce the variety of transcortical aphasia observed in the present case, viz., verbal amnesia. A lesion

of the center for word-deafness, therefore, may also produce verbal amnesia.

Considering the evolution of the speech symptoms in the present case, namely inability to recall names and no word-deafness for a long time, and only towards the end an inability to understand spoken words, finally, apart from the angular gyrus, if we consider the lesion limited to that part of the temporal lobe which constitutes the classical center for word-hearing, we must draw this conclusion that verbal amnesia consitutes a disorder which forms a part of a greater disorder called word-deafness. In fact, where an individual ceases to understand words spoken by others he cannot understand his own words spoken aloud, and consequently is unable to name objects. Otherwise speaking, if a person cannot name objects spontaneously and therefore is unable to express correctly his thoughts, he is affected with a deafness to his own words, self-word-deafness, so to speak. When total word-deafness develops, he is deaf not only to his own words but also to those of others. Verbal amnesia consequently may be considered as an initial symptom of the classical word-deafness. The course of the speech disturbances in my case, also the anatomical findings, speak in favor of the existence of one center for word-deafness and verbal amnesia, also of the fact that the latter is but a subvariety of the former. The creation of transcortical aphasia as a separate variety is not justified by facts such as observed in the present case. Dejerine doubts strongly the existence of transcortical aphasia. While he admits that clinically one may meet with cases presenting the picture of Wernicke's type of transcortical aphasia, nevertheless they are exceptionally rare. He, himself, in all his experience observed but one case of the motor type. In that case the patient, aged 60, intelligent and cultured, non-hemiplegic, could repeat correctly words and phrases and understand them perfectly. His case, therefore, has the same characteristic features of speech as the one reported above, viz., the imitative speech was preserved with complete understanding of words spoken and heard. Of the transcortical sensory aphasia in which the spontaneous speech is impaired, and the patient is paraphasic, and in which the patient repeats words without understanding them, Dejerine has never qbserved a single case. While clinically the two forms of Wernicke's aphasia are possible, their interpre-

tation and anatomical localization are according to Dejerine quite disputable (Sémioligie des affections du Système nerveux. 1914).

The individual features discussed in this contribution have bearing not only on certain subvarieties of aphasia, but also on the much disputed questions raised by Marie with reference to the unification of the entire subject of speech disorder instead of preservation of the old division of aphasia into motor and sensory. As is well known, Marie in 1906 declared that Broca's aphasia is Wernicke's aphasia plus anarthria, that there is consequently but one aphasia, and finally, that all aphasics present invariably an intellectual deficit which may vary from a simple slowness of normal functions to a total suppression of all the faculties. Anatomically Marie considered that Broca's region may and may not be found involved in cases of aphasia, but it plays no part whatever in the function of language. The real lesion, according to Marie, is found simultaneously in Wernicke's zone and in the lenticular zone. The latter comprises the external capsule, the lenticular and caudate nuclei, the anterior and posterior segment of the internal capsule, also the optic thalami.

In two different contributions (*Archives of Internal Medicine, Dec., 1910; New York Medical Journal, Jan. 4, 1913*) I presented four clinico-anatomical records in which the subject of aphasia was discussed from the standpoint of the exclusivism assumed by the various advocates of one or the other view. The anatomical findings proved conclusively that not only the old classical localization, but also Marie's new conception and even Wernicke's area of sensory aphasia, are all deprived of their absoluteness. In addition to the pathological data of my own cases I brought forth a large number of observations of other writers all corroborated by anatomical findings. The case reported in the present contribution, apart from the instructive features detailed above, presents also valuable data for the problem of localization. We have seen that the third frontal convolution, the insula, and the lenticular zone, are all intact. Clinically the patient showed no motor aphasia and no anarthria or dysarthria. Neither could I observe a mental deficit, upon which Marie lays so much stress and which he considers as an inevitable requisite of any form of aphasia, for the patient was able to recognize his own errors as well as those of others who spoke to him for a long period of his illness until complete word-deafness and total alexia developed. The condition is,

GLIOMA IN THE LEFT HEMISPHERE INVOLVING THE TEMPORO-PARIETAL REGION.

therefore, typical of the old classical sensory aphasia such as conceived by Wernicke. As there was no motor aphasia, the old precise subdivision of aphasia into motor and sensory stands confirmed by the present case. On the other hand, in Case I of my series (*New York Medical Journal, loc cit.*), Broca's convolution was seriously affected and still the patient's motor speech was intact. Also Marie's lenticular zone was very seriously damaged and still there was no dysarthria. In Case II of the same series there was absence of motor and sensory aphasia, but there was anarthria. Pathologically the left Broca's convolution was intact and the lenticular zone was only partially involved. In Case III of the same series the third left frontal convolution and the insula were intact, but the left lenticular zone was destroyed. During life there was no trace of a paralytic manifestation of speech (anarthria). There was some word-blindness and partial verbal amnesia, but the angular gyrus, the supramarginal gyrus, and the posterior portions of the first two temporal convolutions, were all found intact. In the case published in the *Archives of Internal Medicine* (*loc. cit.*) the contention of the function of the lenticulostriated body as advocated by Marie could not be confirmed by the pathological findings. The destruction of the lenticular and caudate nuclei was complete, and yet the patient did not present the least indication of dysarthria. A partial word-blindness and partial verbal amnesia were present, nevertheless the angular gyrus, the insula, the temporal convolutions, and the frontal convolutions, were all found intact.

The anatomo-clinical findings of the present case run parallel with those of any of the other cases, their value is identical, and they lead to the same conclusions which were expressed in the former contributions.

First, the multiplicity of lesions ordinarily encountered in cases of aphasia is certainly striking. Second, in the various manifestations of the faculty of speech several areas of the cerebrum are involved, but not one special area. Third, neither Broca, nor Wernicke, nor Marie have solved the question of localization of aphasia, for the anatomical material in our possession tends to invalidate equally strongly the former as well as the late views on this problem. No final conclusions can be drawn in the state of our present knowledge.

# A UNIQUE MURDER CASE WITH APPLICATION OF NEW LAW GOVERNING EXPERT TESTIMONY.

By JAMES W. PUTNAM, M. D., Buffalo, N. Y.

On the 31st of March, 1915, a young man was killed on the beach near Dunkirk, N. Y., under the following unusual circumstances:

The murderer, Frank Wieczorek, a Pole, about 43 years of age, having been in this country 23 years, arrived in Dunkirk on the 30th of March as a tramp and slept that night in a barn. The following morning he wandered down to the shores of Lake Erie and saw his victim, a young man, for the first time in his life. After asking him the direction to the Polish settlement in Dunkirk, which the young man indicated, raising his arm and pointing to the Polish church, the murderer, without warning, fired two shots, killing the young man, who was 18 years of age. Wieczorek then wandered on a short distance and notified some men that he had just killed a man and to send for the police. He then sat down and waited on the beach until the officers came, when he walked towards them, extended his hands and told them to put on the handcuffs, as he had killed a man. The history from that time on, as obtained by the writer, is as follows:

Some time in December, 1914, the defendant received word from an immigrant that his mother had been killed in a place of conflict in the European War somewhere near Prysmzl. At that time the thought came to him, or it came into his mind, or God told him (he used all of these expressions at different times), that if they killed his mother he ought to kill somebody. That thought was ever present with him until the morning of the 31st of March, when he said: "The time has come; I must kill someone." He left the place where he had been staying, somewhere down on the Hudson, and worked his way or tramped his way going through Buffalo to Dunkirk. From the time he claims to have received the message until the time of the killing no definite account of his wanderings was obtained. The morning of the 31st of March something in his

mind told him, or God told him, that he must kill someone that day, and he started out fully determined to kill someone. He had had a loaded revolver in his possession for several weeks prior to this date.

The first person he met that morning was a young fellow of slight build whom he addressed twice "good morning," but he decided not to kill him as he was too slight, and he "wanted to kill a man and not a boy." He wandered on about 200 feet farther and met a teamster driving a load of gravel. The teamster testified later that the defendant had a revolver in his hand and acted queerly, and the teamster watched him for some distance. Referring to this teamster, the defendant said that he at first thought of killing him, but decided not to because his mind told him the teamster had too many clothes on, and the defendant did not know whether his bullet would go through the teamster's clothing, so he let him go. The defendant proceeded for about 100 feet until he met his victim and killed him in the manner already described.

The main facts as to the commission of the crime and the motive therefor were obtained from a statement given to the Dunkirk police immediately after the arrest of the defendant.

The defendant was indicted by the grand jury of Chautauqua County and arraigned at Mayville, N. Y., in June, 1915. At that time he said he wished to plead guilty; that he did not want a lawyer as it was all foolishness; that he had committed the crime. When he was informed by the court that an attorney would be assigned to him and that a plea of not guilty would be entered he said, "All right, I will plead not guilty but I did it just the same. I do not want an attorney; it is all foolishness; what is past is past."

In the jail between the time of his arraignment and the time of his trial, which occurred at Mayville, N. Y., September 20-24, 1915, he stated at various times that they killed his mother and they killed people in revolutions and that was all right; they were killing people in Europe all the time and that was all right.

To one of the physicians, when he was asked why he had done this, he said that he had heard that they electrocuted people here in this country for this, and hanged them, and cut their heads off, and he wanted to see what they would do with him. Upon being asked if he did not know that it was wrong to kill the boy, de-

fendant replied that they kill people in his country during the war without any cause and that was not wrong; that if there were a revolution and people got killed in this country that would not be wrong, saying that he did not kill the boy, but that the Man above (meaning God) told him he must kill someone.

Defendant's attorney told the writer that he had never been able to get any assistance of any kind from the defendant in the preparation of his defense, nor would he give his attorney the slightest information about himself or the crime.

Owing to the unusual circumstances of the crime Justice Charles B. Wheeler felt that he should appoint an expert under an act which was passed by the Legislature of 1915, being chapter 295 of the Laws of 1915, which provides that the court may appoint its own expert to examine a defendant accused of crime and report to the court, and either the people or the defendant may put the court's expert upon the stand for examination, as either party may desire. Under such an appointment of the court the writer went to Mayville for the purpose of examining the defendant. Upon arriving at the jail the writer notified the defendant of his appointment by the court, and that he had come to go over the entire matter with him to assist the court in understanding the case. Thereupon the defendant said: "It is all foolishness; it will all come out in the trial. I won't say anything; I won't answer any questions"; and turned his face away. While being told that he would not be asked anything about the killing, and only about his education, his life, what he had done in this country; that I wished to get some facts that would help the court in an understanding of his case, he listened stolidly but made no reply. He refused to allow the writer to look at his tongue or his eyes or to touch his body in any way, withdrawing his hand with a jerk when the writer attempted to take his pulse.

In appearance the man was neat, about 5 feet, 8 inches in height, weighing, say, 175 pounds, strongly built, erect and seemingly above the average intelligence of a person in his station in life.

The jailer reported that during the entire time of his confinement he was extremely orderly, obedient and docile, in other words, a model prisoner; that he had practically nothing to do with other prisoners and would spend much of his time standing with his arms folded and looking off into space. His cell was

always cared for by him and kept scrupulously neat, and his actions generally would seem to indicate that he had been in an institution before, although not the slightest definite information could be obtained on this point.

At the trial he took no interest whatever and gave his attorney no assistance in the selection of the jury or in any other way, and had no conversation whatever with him.

Immediately upon his appearance in court on the second morning of his trial, before taking his seat, he announced to the court he wanted it understood that the attorney assigned to defend him at the trial had no authority to represent him and had nothing to do with his case.

On the third morning of his trial his attorney told him in open court that now was his chance to take the stand to say what he had to. Thereupon he rose to his feet and addressed the court as follows: "I sit solid in this chair," and said to the counsel defending him, "I having nothing to do with you," and pointing to the district attorney continued, "this is the man for me." Upon being then asked by the court if he cared to take the stand or to make any statement he made no reply whatever, except that he would "talk no more," and that "he had told it a hundred times," and "what's done is done." He further said at different times that the trial was all foolishness, that he had told his story once to the chief of police in Dunkirk, who had taken it in writing and that he would not tell it again.

The opinion at which the writer arrived, taking his examination and the history of the case as presented in court, was that the man knew the nature of his act, namely, that he was killing a man; that he knew it was contrary to the laws of the state, because he immediately notified the people present to send for the police, and said that he had killed a man; but that he did not know the quality of the act, namely, that he was doing wrong, because he laid the responsibility upon God, who told him to kill; and the writer so reported to the court.

After the jury had been deliberating for a time they requested further instructions from the court, during which instructions the law compels the defendant to be present. Upon his being notified by the jailer that he was wanted in court he exclaimed, "Oh, Hell, ain't they through with that business yet?"

The jury rendered a verdict of acquittal on the ground of insanity and the defendant was committed to the State Institution for Insane Criminals at Matteawan, N. Y. In this verdict the defendant manifested no more interest than he had in any other stage of the proceedings.

Because of the unusual character of this crime, and the fact that the writer was appointed as the court's expert under the act above referred to, it would seem to be a matter of general interest to publish this case.

The Act of 1915 appears to be the first legislation in this state providing for the designation of official experts in cases where the issue is insanity.

# Notes and Comment.

HISTORY OF THE INSTITUTIONAL CARE OF THE INSANE IN THE UNITED STATES AND CANADA.—The first volume of this monumental work has just been issued from the Johns Hopkins Press, and in contents and general make-up reflects credit upon the editorial committee having it in charge and the American Medico-Psychological Association, under whose auspices it was published.

To Dr. Henry M. Hurd and his fellow workers, Drs. Drewry, Dewey, Pilgrim, Blumer and Burgess, very great credit is due for the time and labor which they have given gratuitously to the preparation of this history.

The whole work will comprise four volumes. Volume One contains a History of the Association of American Institutions for the Insane, 1844-1892; a History of the American Medico-Psychological Association, 1893-1913; a History of the AMERICAN JOURNAL OF INSANITY; Early and Colonial Care of the Insane; The Era of Awakening to Proper Care; a Sketch of the Work of Miss D. L. Dix; The Evolution of Care in Organized Institutions in the United States; County Care of the Insane; Care of Chronic and Incurable Insane; State Care; The Wisconsin System; The Evolution of the Administration of Hospitals; Government of Institutions; Investigation of Public Institutions; Development of Hospital Architecture; The Propositions Laid Down for Building and Management; Reforms in Caring for the Insane; Medical and Non-Medical Treatment of the Insane; Employment for the Insane; Individual Treatment; Experimental Removals; Psychopathic Hospitals; Research Work in Hospitals for the Insane; Training Schools for Nurses in Mental Hospitals; Private Care of the Insane; The Growth of the Law of Insanity; Commitment of the Insane; Conditions of Discharge; Voluntary Patients; The Care of the Criminal Insane; Immigration as a Problem in the Care of the Insane; Insanity Among the Negroes, Among the

Indians; Census of Insanity; Feeble-Minded in Institutions; Institutional Population.

Canada.—The Care of the Insane in Canada Previous to the Establishment of Provincial Institutions: Establishment of Provincial Institutions; the System of Care of the Insane in the Provinces; The Contract System in the Province of Quebec; Immigration as a Problem in Canada; Census of Insane in Canada; Laws for Commitment of the Insane in the Provinces of Canada.

Volumes Two and Three contain an account of the Care of the Insane and Feeble-Minded in the United States, together with detailed and careful histories of all the individual institutions in Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming; also in Alaska, Hawaiian Islands, the Philippines and Porto Rico.

Volume Four treats of the Care of the Insane and Feeble-Minded in Canada and gives histories of every individual institution in the provinces of Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Prince Edward Island, Quebec and Saskatchewan; also in Newfoundland. The remainder of the volume contains biographies of more than 200 persons who have been engaged in work in behalf of the insane as philanthropists, hospital administrators or alienists; and an index of the whole work.

The price of the four volumes is $10, but to members of the Association they are furnished at $8.

We are somewhat painfully surprised to learn from Dr. Hurd that the number of subscribers to the work has fallen short of expectations. We cannot believe that this is due to indifference on the part of the members of the Association to an opportunity to obtain for themselves and for the libraries of the institutions with

which they are connected a most valuable work. We believe on the contrary that many who have not subscribed have failed to do so from carelessness, or from forgetfulness, due to the pressure of other matters, and that when attention is called to the matter they will at once perform a duty, for we consider it such, which they have thus far neglected.

Every member of the Association should own a copy of this work, and it should be on the shelves of every institution library.

Did we not stand somewhat in awe of our editor emeritus, we would here set down our conception, inadequate though it would be, of the labor which he, Dr. Hurd, has put into these volumes, and of the debt which the Association owes to him. It would be inadequate because no one can comprehend in detail all that he has done, and because it would be necessary to write a review of the volumes which he has edited to reveal in a small degree the extent and completeness of his work.

We do not intend in any degree to underestimate the assistance rendered by his associates on the committee during the last eight years, but we know that the work of reading and revising manuscripts, reading and correcting proof, planning and arranging chapters, has been done largely by Dr. Hurd, and done as few other men in the Association could do it.

It was a very happy coincidence that the appearance from the press of the first volume was on March 25, which happened to be the fiftieth anniversary of Dr. Hurd's graduation in medicine. We are confident that all of our readers will join us in congratulating him upon thus happily rounding out a half century spent in service to his fellow men.

Several of Dr. Hurd's friends in Baltimore, including trustees of The Johns Hopkins Hospital, teachers in the medical school, former associates in the hospital, and others were invited to join him at dinner on the evening of the 25th of March. Not until the close of the dinner was the fact disclosed that the occasion was in the way of a quiet celebration among his friends of the anniversary. We wish we could reproduce the spontaneous expressions of affection for Dr. Hurd and appreciation of his work which immediately came forth from those present. The publication of the History on that day having been mentioned, one of the guests went out and procured a volume, on the fly leaf of which

there was then inscribed the following, which was signed by all present, and the volume presented to Dr. Hurd:

MARYLAND CLUB, March 25, 1916.

We, assembled at a dinner to celebrate the fiftieth anniversary of Dr. Hurd's graduation in medicine and the publication of this work, of which this is the first copy, record our names in grateful remembrance and affection for the editor, colleague and friend: Henry D. Harlan, R. Brent Keyser, William A. Marburg, George K. McGaw, Blanchard Randall, George Cator, Ira Remsen, Edward N. Brush, William H. Welch, Howard A. Kelly, William Halsted, W. H. Howell, J. P. Mall, Henry J. Berkley, John J. Abel, Lewellys F. Barker, Thomas S. Cullen, William W. Russell, H. M. Thomas, Richard H. Follis, Thomas R. Brown, Thomas B. Futcher, Winford Smith, J. Hall Pleasants, Wm. Bullock Clark, Frank R. Smith.

EIGHTH ANNUAL MEETING OF THE NATIONAL COMMITTEE FOR MENTAL HYGIENE.—The eighth annual meeting of the National Committee for Mental Hygiene, held February 25 at the Hotel Biltmore, New York, was attended by a large group of alienists, social workers and philanthropists, Mr. Otto T. Bannard, the treasurer, announced that the Rockefeller Foundation had donated to the National Committee $22,800 for carrying on surveys of the care of the insane in sixteen states during the present year, supplementing gifts of Mrs. William K. Vanderbilt, Mrs. A. A. Anderson and Mr. Henry Phipps, which makes it possible for the committee to greatly extend its work.

The report of Mr. Clifford W. Beers, the secretary, showed that the movement for conserving mental health and for improving the care of the insane and feeble-minded has grown in a gratifying manner. Societies for mental hygiene are now at work in Connecticut, Illinois, New York, Massachusetts, Maryland, Pennsylvania, North Carolina, the District of Columbia, Alabama, Louisiana and California. During the present year societies will be organized in Michigan, Rhode Island, Minnesota, Indiana, South Carolina, Tennessee and Texas. The financial resources of the National Committee and state agencies have also increased, until now about twenty-five times as much is being expended on this sort of mental hygiene work as was spent in 1908, when the first society was founded.

Dr. Walter E. Fernald, superintendent of the State School for the Feeble-minded of Waverley, Massachusetts, presented a plan

which had been adopted by the Sub-committee on Mental Deficiency, of which he is chairman, for popular education, extensive surveys and researches in this subject. Demands for advice regarding institutional provisions, special classes for backward children and psychological examinations in children's courts, Dr. Fernald said, had been received from all parts of the country and it was felt that this movement to deal more adequately with the problem of the feeble-minded could be greatly helped by the same kind of authoritative advice and aid which is being given on behalf of the insane. A strong appeal was made by Dr. Fernald for special funds to meet the increased demands for this kind of work. Dr. William L. Russell, medical superintendent of Bloomingdale Hospital, described how the work of the National Committee is conducted under the supervision of an Executive Committee, all experts in different fields of mental hygiene.

Dr. Thomas W. Salmon, the medical director of the committee, gave an account of the surveys of the care of the insane which had been carried on during the year in South Carolina and in Texas and announced that similar studies, each conducted by expert alienists, are under way or about to be undertaken in California, Tennessee, Missouri, Illinois, North Dakota, Indiana and in the District of Columbia. Requests for some of these surveys have come from the highest officials in the states and attention was called to the striking change of attitude on the part of those charged with the care of the insane who not only permitted but welcomed such expert studies of their facilities for dealing with mental diseases. In the course of a moving description of the sufferings of the insane confined in county almshouses, jails and poor farms, Dr. Salmon expressed the belief that the surveys which have been made possible by the appropriation of the Rockefeller Foundation will result in the complete abandonment of this type of neglect within the next few years. The steady decline in the number of persons in almshouses which has existed since 1880 is due, he said, in large part to the increasing provision in hospitals for the insane and, with the acceleration of this movement and increased provision for the feeble-minded, the end of the small town or county poor farms which dot the country-side is in sight. It was shown that 1688 such institutions, each with less than twenty-five inmates, existed in the United States all serving no useful

purpose but, on the contrary, inviting the improper detention of the insane and the feeble-minded. The most encouraging feature of Dr. Salmon's report was an account of the increasing interest in securing psychopathic hospitals for all large cities in which the earliest and most efficient treatment can be provided for acute recoverable cases of mental disease. Such hospitals each with its out-patient department and psychological clinics for children exist in Boston, Baltimore and Chicago, as well as in several smaller cities, while New York is still unprovided with such an institution.

Among the members of the National Committee present at the meeting and luncheon which preceded it, were: Mrs. William K. Vanderbilt, Sr., Mr. Otto T. Bannard, Dr. L. Pierce Clark, Dr. Charles L. Dana, Mr. Horace Fletcher, Mr. William J. Hoggson, Dr. Frederick Peterson, Miss Florence M. Rhett, Dr. William B. Coley, Prof. Stephen P. Duggan, Dr. M. Allen Starr, Dr. Pearce Bailey, Dr. Henry Smith Williams, Dr. Thomas W. Salmon, and Mr. Clifford W. Beers, New York City; Dr. Lewellys F. Barker, Dr. C. Macfie Campbell, Dr. Arthur P. Herring, Baltimore; Dr. Owen Copp, Philadelphia; Dr. Charles P. Bancroft, Concord; Dr. Stewart Paton, Princeton; Dr. William A. White, Washington; Dr. William L. Russell, White Plains; Dr. G. Alder Blumer, Providence; Dr. Walter E. Fernald, Waverly, Mass.; Dr. C. S. Little, Thiells, N. Y.; Professor E. R. Johnstone, Vineland, N. J.; Mrs. M. M. Acker, Hornell, N. Y.; Mr. John Koren and Dr. Henry R. Stedman, Boston; and Dr. A. C. Rogers, Faribault, Minnesota. There were present also as guests, Mrs. Charles Dana Gibson, Mrs. Kate Douglas Wiggin, Mr. Wickliffe Rose, Mr. I. Vernon Weisbrod and Dr. George H. Kirby, New York; Mrs. Charles P. Bancroft, Concord, New Hampshire.

The following officers for the ensuing year were elected: President, Dr. Lewellys F. Barker; Vice Presidents, Dr. Charles W. Eliot, and Dr. William H. Welch; Treasurer, Otto T. Bannard; Medical Director, Dr. Thomas W. Salmon; Secretary, Clifford W. Beers; Executive Committee, Dr. August Hoch (chairman), Dr. George Blumer, Prof. Stephen P. Duggan, Dr. William Mabon, Dr. William L. Russell, and Dr. Lewellys Barker; Finance Committee, Prof. Russell H. Chittenden (chairman), Otto T. Bannard, Dr. Henry B. Favill, and William J. Hoggson; Committee on Mental Deficiency, Dr. Walter E. Fernald (chairman), Dr. L.

Pierce Clark, Prof. E. R. Johnstone, Dr. C. S. Little, Dr. A. C. Rogers.

HOSPITAL "PREPAREDNESS" IN ENGLAND.—Not the least of the many lessons taught by the European war is the importance of taking stock of the provision for sick and wounded soldiers and sailors in preparing for a sudden emergency. This feature of preparedness is brought out in striking and most interesting fashion by the address of Lieut.-Col. D. G. Thomson, M. D., President of the British Medico-Psychological Association, who, as officer-in-charge of the Norfolk War Hospital, took this year as his theme the "Conversion of a County Asylum into a War Hospital for Sick and Wounded." *

At the outbreak of the war it was thought, not unnaturally, that in a maritime nation like Great Britain there would be great naval engagements involving the landing on the North Sea coast of a vast number of sick and wounded men, whereas the naval hospitals were situated far away on the south coast. With this idea in mind, Norfolk, being the nearest point to German naval bases, offered as early as August 5, 1914, to furnish the Admiralty 100 beds and to erect tents for 150 more in the Norfolk and Norwich Hospital. This offer not having been accepted, it was transferred later to the War Office, and on October 17 the first convoy of 100 sick and wounded men arrived. In the same month occurred the battles of the Marne and Aisne, which, in view of probable requirements, suggested enquiry as to facilities for treating the wounded in asylums. Thereupon, on November 23, the Norfolk County Asylum offered 100 beds. Towards the end of January, 1915, the War Office, when the impression obtained that the Allies contemplated an advance against the enemy in spring, invoked provision for 50,000 beds, of which number the Board of Control requisitioned for 15,000 in asylums. The plan was that certain county and borough asylums near large towns should be handed over to the War Office. Dr. Thomson describes how this herculean task was accomplished and, despite his great modesty, one cannot fail to see with how great patriotism and efficiency the upheaval was met and the extraordinary service rendered. It would carry

* Journal of Mental Science, January, 1916.

us too far to go into the details of conversion in the 12 hospitals upon which the War Office levied. Briefly, the scheme involved the division of the whole asylum system into groups, and when one of the institutions had been selected for war purposes, its patients were distributed among the other members of the group or otherwise provided for. At first there was an unreasoning outcry of prejudice and ignorance in the press about the "outrage" of turning over the sick and wounded to "lunatic asylums," which was soon stilled, however, when the propriety and potential adequateness of the provision were appreciated. The readaptation of the buildings themselves presented no serious difficulties. Contrary to expectation, there was very little friction between the former mental nurses and the hospital-trained newcomers. The men who had been trained as asylum attendants won great praise as orderlies. The conduct of the patients was excellent on the whole, and there was no trouble as to discipline. Dr. Thomson attributes the general contentment to the ample and well-cooked food, the careful planning of occupation and amusements and the reduction to the minimum of all unnecessary restrictions on their liberty. In the discussion which followed the address, it appeared that minor changes in structural arrangements and in method have been effected such as will enure to the permanent benefit of the insane. Mention was made, for instance, of better ventilation by departing from the "asylum" type of window, of handles on the room doors, and of other like modern innovations which the converted war hospital has brought in its wake. No one can read the address without being greatly impressed with the magnificent spirit and thoroughness with which the work was carried through. Dr. Thomson pays a high tribute to Dr. Marriott Cooke and Dr. Hubert Bond, Lunacy Commissioners, but it is easy enough to read between the lines that the president of the British Medico-Psychological Association has himself been *magna pars* in the performance of a great work of reorganization. The JOURNAL salutes the Lieutenant-Colonel.

# Book Reviews.

*The Criminal Imbecile: An Analysis of Three Murder Cases.* By HENRY HUBBARD GODDARD, Vineland School. (*New York: The Macmillan Company, 1915.*)

The *raison d'etre* for this work of 154 pages is to present to the public a conception of the criminal imbecile, his peculiar sub-normal mentality, and the necessity of changing the present laws governing him. All these are laudable purposes, but it is questionable if the right track has here been broken to do so. No one familiar with the subject doubts that existing laws should be altered to meet new requirements; that a more general recognition of the higher grades of imbecility, together with the necessity of state care for this class, by segregation, is timely, and might have been carried to a point considerably further than is here done.

Eighty-four pages of the book are taken up with a history of the three men and their crimes. Too many unnecessary details of the murders are given, details that in the hands of a feeble-minded reader—the book being intended for popular notice may fall into such hands—are too suggestive and may serve as a stimulus to further crime. As everyone knows, the average high-imbecile is only too ready to accept suggestion.

The valuable part of the work is found in the three short chapters on the "Criminal Imbecile," "Responsibility," and "Punishment of Criminal Imbeciles." The burden of the first is to show that we are not dealing with "normal but vicious persons," but with those that are mentally defective and therefore not responsible for their crimes; also, that these persons seldom if ever attain a mental standing equal to that of a normal child of 12 years. The conclusion drawn from the second chapter is that individuals of this age (12 years) "do not know much about right and wrong." "They act upon impulses and upon instinct (especially sexual instinct) and without very much forethought." The last chapter contains the mainspring of the work. It shows that even under existing laws the imbecile murderer, by reason of his incomplete mentality, is not guilty of murder in the first degree, a doctrine which from our standpoint is debatable in some instances.

We fully agree with the author in the statement that "after all what we want is protection for society" against the criminal feeble-minded, as probably 50 per cent of all crimes are committed by the imbecile class, either for himself, or acting upon the suggestion of others, better endowed but equally criminally minded, who use him as a tool to accomplish their own ends. "The problem is not so much what is to be done with the im-

becile after he has committed a crime, as the prevention of the imbecile becoming a criminal." This can only be done in large communities through the medium of the public and parochial schools, where every teacher should be required to report dullards and backward children to special examiners, who may send those requiring especial training to selected institutions, with a view to individual instruction or life-long segregation. "Examination, such as is now possible, reveals the fact that they (the children) are mental defectives, and as mental defectives are potential criminals." "Feeble-mindedness as related to crime may be exterminated in a few generations if we will use the intelligence to attack the problem at its root," a final word with which all concerned with the subject will fully agree.

H. J. B.

*Text-Book on Nervous Diseases.* By G. ASCHAFFENBURG; H. CURSCHMANN; R. FINKELNBURG; R. GAUPP; G. HIRSCH; FR. JAMIN; J. IBRAHIM; FEDOR KRAUSE; M. LEWANDOWSKY; H. LIEPMANN; L. R. MÜLLER; H. SCHLESINGER; S. SCHOENBORN; H. STARCK AND H. STEINERT. Authorized English Edition, Edited by CHARLES W. BURR, M. D., Professor of Mental Diseases in the University of Pennsylvania, etc. With 156 Text Illustrations—In two volumes. (*Philadelphia: P. Blakiston's Son and Company, 1915.*)

This work has been well known to most readers of German neurological literature, and the profession are under many obligations to Dr. Burr and those who have aided him in translating the work into English. The first section of Volume I treats of General Diagnostics of Nervous Diseases and presents a very thorough and generally up-to-date account of the methods of taking a history, making an examination, and arriving at a diagnosis. One is tempted to criticise the methods described in the microscopy of the cerebro-spinal fluid, but it should be borne in mind that this work is for the use of those who by reason of their own experience can readily modify the directions given. No mention is made of Lange's colloidal gold reaction in the differential diagnosis of various forms of cerebral lues, which, however, may be accounted for by the publication in German having been made before Lange's work had been made public.

The sections following are upon Diseases of the Peripheral Nerves; Diseases of the Spinal Cord; Myopathies Without Demonstrable Changes in the Nervous System, and Diseases of the Brain. These sections comprise the first volume, and the last, Diseases of the Brain, is continued into the second volume. Of special interest to psychiatrists are the sections upon Progressive Paralysis of the Insane, by Gaupp, whose contributions to the literature of paresis are well known; upon Psychasthenic States, by G. Aschaffenburg, and upon Alcoholism, Morphinism, Cocainism, Pellagra, etc., by Quensel. A section by Dr. Burr, the editor, closes the work. This section is upon The Diagnosis and Treatment of Neurasthenia, Psychasthenia, Hysteria, and Borderland Mental States.

Beyond a brief reference in Gaupp's article by the editor to the injection of salvarsan into the veins nothing is said concerning recent intra-spinal and intra-cranial treatment of paresis. Gaupp shares apparently the general pessimistic feeling of the profession regarding the success of any method of treatment of well-established paresis. He makes, however, a strong plea for prophylaxis, by preventing the spread of venereal diseases.

The whole work is a valuable contribution to the literature of diseases of the nervous system. Like all works by several authors, it presents varying grades of excellence. Some of the writers have been too brief in their treatment of important details, while others have been prolix with unessentials. But in neither case do these faults, if they are to be considered as such, seriously detract from the value of the work. Some German idiomatic phrases have been rather badly rendered in translation, and occasionally one finds a sentence which is difficult to comprehend without repeated reading.

The volumes are attractively presented, but the use of heavily glazed paper throughout makes them unnecessarily heavy.

*Man—An Adaptive Mechanism.* By GEORGE W. CRILE, F. A. C. S., Professor of Surgery, School of Medicine, Western Reserve University; Visiting Surgeon to the Lakeside Hospital, Cleveland. Edited by ANNETTE AUSTIN, A. B. Price $2.50. (*New York: The Macmillan Company, 1916.*)

The following quotation from the preface of this book may be said to sum up its scope:

"For more than twenty years, the general theme treated in this volume has been under investigation in my laboratory and my clinic, and the volumes published during that time have recorded the steps by which I have approached the theories here presented.

"The accumulated experimental and clinical data are so extensive that summaries only are given in the present volume, which is an argument for the main thesis, that man is essentially an energy-transforming mechanism, obeying the laws of physics, as do other mechanisms. In presenting this thesis, certain hypotheses have been freely employed where the data were insufficient that they may furnish a working basis upon which to accumulate additional data. An hypothesis—incomplete or even false—is so easily demolished that it can do little harm; while the presentation of a 'false fact' may produce pernicious results.

"To no one are the imperfections and shortcomings of this presentation more apparent than to the author, who lays no claim to expert knowledge in any one of the several sciences involved in attempting a synthesis of such wide scope."

With such an introduction any spirit of severe criticism is dissipated, for we must judge an author by his intention as well as by his result. We believe that in the present volume Dr. Crile does not attempt more than to present in a popular and readable form the results of the researches

which he and his colleagues have been carrying on for many years, and the theories which he has evolved from them.

Our readers are doubtless familiar with many of the papers in which from time to time Dr. Crile has published a part of his results of investigation and parts of the theory which is here presented more completely. As they have been favorably or unfavorably inclined towards the former papers so will they approach the volume we are discussing, with either a receptive or combative bias.

The introduction refers to the influence that Darwin's theory of evolution has had upon the sciences, but unfortunately that of medicine has been rather backward in making use of this theory because it has been so close to the everyday life of the people and hence more influenced by empiricism and superstition. It is believed, however, that we are well started on a stage of medicine which is characterized by synthesis and coordination of facts. The present volume aims to harmonize a large amount of clinical and experimental data by the application of certain biologic principles. The start was made with an investigation of surgical shock, which progressed into the field of disease phenomena, and finally came into the domain of so-called normal processes.

"One result of this research has been the accumulation of evidence tending to show that in the distribution of contact ceptors, of chemical ceptors, of the mechanisms for overcoming pyogenic infections and for blood clotting; in the distribution of pain areas and of special reflexes we have a phylogenetic summary of the evolution of man.

"It is with the desire of increasing the scope of preventive medicine; with the hope of relieving and even of curing certain acute and chronic diseases and of stimulating a biologic trend of thought in medicine to the end that disease like health may be given its evolutionary setting, that this volume is offered."

The quotations which have been made probably sufficiently indicate the character and aims of this book and the question of how well the author has succeeded can be best answered by the individual reader. Dr. Crile has certainly made out a "good brief" for his cause and probably a final decision must be left for time and an increase in our personal observation and knowledge to render us capable of accepting all that he has to say. Even should some of the theories which lead up to the principal one be proved incorrect much has been accomplished by the stimulus to thought and investigation which always follows the promulgation of views which are new to us. Undoubtedly the publication of Dr. Crile's views upon surgical shock appealed to the psychiatrist as being a much more rational view of the subject than had been met with before, because he took into account the psychic factor of fear which has been too frequently ignored by operators in the past. So too, this book will appeal strongly to the psychiatrist who will find in it much stimulus for thought and food for reflection. We may perhaps be captious and feel that statements such as "a specific such as salvarsan" are made too enthusiastically, but such

criticism would be trivial in view of all the well thought out and logical presentations of the more important views.

The book is well illustrated with nearly a hundred photomicrographs, photographs and drawings and is mechanically quite up to the high standard of its publishers. W. R. D.

*Games and Exercises for Mental Defectives.* By HILDA A. WRIGHTSON. With a preface by H. H. GODDARD. Price $1.25. (*Cambridge, Mass.: Caustic-Claflin Co., Harvard Square, 1916.*)

As the title indicates, the book contains brief descriptions of 115 games especially adapted to train defective children in such functions as co-ordination, concentration, attention, spirit of play, color sense, rest, discipline, memory, observation, sense of touch, etc. These are admirably given with many suggestions as to the proper way of carrying them out so that an untrained person, such as the child's parent, can readily understand how they may be applied. Certain general rules are also given which make the use of these exercises more efficient. As might be inferred the exercises are arranged progressively so that the various functions are developed without entailing any mental or physical strain upon the child. It is a book which will prove of great value to anyone interested in improving the mental condition of defectives whether child or adult.

W. R. D.

# Obituary.

## DR. ALFRED IRA NOBLE.

Dr. Alfred Ira Noble was born in Fairfield, Me., March 3, 1856, and died in Detroit, Mich., on January 20, 1916.

He received the degree of A. B. from Colby College, Maine, in 1883, and M. D. from Bowdoin College in 1886. He was united in marriage with Ella Annie Boole, August 27, 1887. He engaged in the practice of medicine in Boston for one year, then became associated with the Worcester State Hospital as first assistant physician, and later as assistant superintendent. He held the latter position until 1905, when he received the appointment of medical superintendent of the Kalamazoo State Hospital at Kalamazoo, Mich., which position he held at the time of his death.

For a number of years the doctor was secretary of the New England Psychological Society. He was a fellow of the Massachusetts Medical Society and the American Medical Association, and member of the Worcester Medical Association, the American Medico-Psychological Association, the Detroit Society of Neurology and Psychiatry, the Michigan State Medical Society and the Kalamazoo Academy of Medicine.

Dr. Noble contributed from time to time to medical literature and to the general public well-prepared and exceedingly instructive essays on live medical and sociological topics. A paper on "Shorter Hours for Nurses and Attendants," published in the proceedings of the American Medico-Psychological Association, marked the beginning of an important change in hospital management. A paper on "The Curability of Insanity," read before the Detroit Society of Neurology and Psychiatry, presents some statistics most carefully collated by him personally, and demonstrates convincingly that the percentage of recoveries given by most of us is altogether too high.

During his administration at the Kalamazoo State Hospital he planned and directed the construction of Van Deusen Hospital,

a receiving hospital for women equipped with modern apparatus for treatment. He also constructed a laboratory for pathological and research work. The Doctor also recognized and emphasized the value of occupation, not only as a curative measure, but as a means of education in chronic custodial cases, thereby developing them into useful members of a hospital community. Through his efforts a large industrial building is in process of construction, which, although he did not live to see completed, will stand as a monument to him in this direction. One of his last acts was the advancing of the standard of the training school for nurses, raising the requirements for admission, extending the course to three years, and requiring nine months' training in some general hospital. Dr. Noble was very conservative, yet always progressive, a man of high ideals, a gentleman, and he possessed a wealth of tact, diplomacy and genuineness that won the confidence of and made lasting friendships with the public, his patients and his associates.

His remains were taken to Boston, Mass., for interment.

## DR. GEORGE HAMILTON SCHWINN.

Dr. George Hamilton Schwinn was born January 11, 1873, in Baltimore, received his preliminary education in the public schools of that city, and graduated from the Maryland College of Pharmacy in 1894. He then came to Washington and entered the Columbian University Medical School, now known as the George Washington University, graduating in 1898. Shortly thereafter, in July of that year, he was appointed Clinical Interne in the Government Hospital for the Insane under the late Dr. Godding. Gaining promotion step by step, in January, 1911, he succeeded the late Dr. Stack as first assistant, which position he held until his death.

In 1902 he married Miss Elvira Gaddess of Washington, D. C. His wife and twin sons, George Hamilton and Gordon G., born in 1904, survive him.

In the spring of 1914 Dr. Schwinn's health became much impaired. He was confined to his bed several weeks, and as soon as he was strong enough to travel he went to Saranac Lake, N. Y. where he spent the summer. The rest and treatment there greatly

benefited him, and he returned to his duties at the hospital early in November buoyed up with the hopes of an ultimate cure. The following spring, however, the appearance of certain symptoms alarmed his family and friends, and in July, 1915, he went to the foot hills of the mountains near The Plains, Virginia. The summer spent there proved of little benefit, and much discouraged he felt it incumbent upon himself to return to his duties. It was now evident that his malady was firmly established. He clearly appreciated the outcome, and with never a murmur of complaint, against the advice of his friends, he endeavored to keep up with his work when it was to be seen that his health suffered in consequence. In January, 1916, his illness assumed a more acute form. He grew rapidly weaker, and with pathetic patience he awaited the inevitable end, which came February 6, 1916, in his apartments in the hospital.

Dr. Schwinn was first of all a man of the highest honor, and in this trait of character were embodied all its attributes. He was a devoted and self-sacrificing husband and father, a faithful and generous friend. Serving his entire practice of nearly eighteen years in the Government Hospital for the Insane he was the ideal type of institutional physician, ever loyal to the hospital, patient, sympathetic, gentle in speech, and noted for the deep and personal interest he took in his patients and their friends. Of these latter there came to his bier many who in sorrow told of their loss and of the deep debt of gratitude they owed to the man who ever patiently by the hour listened to their woes, adjusted their difficulties and sent them home with a sense of peace and comfort.

Dr. Schwinn was the author of the following: "Some of the Difficulties Encountered in Making a Diagnosis of Paresis," The Journal of Nervous and Mental Diseases, December 1910, XXXVII, 754-764; "Prognosis and Therapy of Cerebral Syphilis," The Journal of the American Medical Association, 1913, LX, 1852-1855 (read before the Society for Nervous and Mental Diseases of Washington, D. C. at a Symposium on Syphilis of the Central Nervous System held March 20, 1913).

ALFRED GLASCOCK, M. D.

# Half-Yearly Summary.

ARKANSAS.—A survey of the feeble-minded of this state has been made by Dr. Harry T. Crane of the Eugenics Record Office at Cold Spring Harbor, N. Y., under direction of the Arkansas Commission for the Feeble-minded. A study and classification of those in the state penal and charitable institutions was first made, and this was followed by a study of those in public schools for the purpose of ascertaining how many and what percentage of children reported as backward are really feeble-minded.

CONNECTICUT.—*Hartford Retreat, Hartford.*—Out-of-door sleeping porches on the disturbed wards to accommodate 16 patients have been completed.

DELAWARE.—*Delaware State Hospital at Farnhurst.*—Ground will be broken in April for a new building to accommodate 100 female patients. The cost will be $60,000. The dimensions will be 140 by 60 feet. The ground floor will consist of large recreation rooms, while dormitories and single rooms for disturbed patients will be located on the second floor.

DISTRICT OF COLUMBIA.—A meeting of the Board of Directors of the Society for Mental Hygiene of the District of Columbia was held December 2, 1915, at which Surgeon-General Rupert Blue was elected President; Mr. Cuneo Randolph, Vice-President; Dr. D. Percy Hickling, Secretary; and Miss Nellie Sedgley, Treasurer.

A bill is now pending before Congress requiring the parent, guardian, or custodian of any child within the jurisdiction of the Juvenile Court to have such child examined by a physician if the child appears to be in need of medical care. The court may require such examination to be made and may order the child to a hospital for this purpose. A clause requiring every official of the District to render the court such assistance as is within his jurisdictional power will give the court the benefit of the services of the District Alienist for such investigations as are necessary.

Another bill provides for the voluntary admission of residents of the District into the Government Hospital for the Insane. The person making such application must be regarded as competent to appreciate such a step by the superintendent of the hospital, and detention cannot be enforced for more than three days after written notice of intention of leaving.

FLORIDA.—*Florida Hospital for the Insane, Chattahoochee.*—A pathological laboratory building with a mortuary and refrigerator is being erected at the present time.

The tuberculosis colony has been completed and is in operation in charge of an experienced tuberculosis nurse from the Maryland State Tuberculosis Colony.

Water power is being developed near-by by the erection of a concrete dam with two turbine wheels of approximately 50 horse-power each. This power will be utilized for pumping water to the center of the institution, a distance of about half a mile, where ground has been prepared for the installation of a new power plant, where it is expected to generate electricity to operate all machinery, pumps, a planing mill, saw mill, etc.

A new and modern dairy barn with accommodation for 80 cows has been erected in accordance with plans formulated by the United States Department of Agriculture.

The last legislature provided for the commitment of all drug habitues and alcoholics to this hospital, authorizing the Board of Commissioners of State Institutions to issue an order against such commitment should the institution become too crowded. There was an immediate influx of a great number of these people necessitating a restraining order from the Board of Commissioners. The hospital is admitting an occasional case as vacancies occur.

ILLINOIS.—A municipal psychopathic clinic was opened early in November, 1915, at the Iroquois Memorial Hospital under the direction of Dr. Harold N. Moyer, head of the psychopathic division of the school sanitary inspection of the Department of Health of Chicago.

The Illinois State Hospital Medical Association met at the Elgin State Hospital on October 28 and 29, 1915, and at the Jacksonville State Hospital on February 24 and 25, 1916. At the latter the following subjects were discussed: Institutional diversions, the Wassermann reaction in the feeble-minded, reeducation of the demented, treatment of paresis, arterio-sclerosis of the brain and cord, diphtheria carriers, alcoholic psychoses, and anoci-association.

—*Alton State Hospital, Alton.*—This hospital is in process of construction.

—*Elgin State Hospital, Elgin.*—The following covers in the main the activities of the institution:

1. The abolishing of all mechanical restraint and seclusion by order of the Board of Administration, affecting all charitable institutions in Illinois under its management.
2. The eight-hour day for employees, and one day off each week.
3. The abolishing of strong dress and ward bench.
4. The removal of bars from windows.
5. Installation of adequate hydrotherapy apparatus in buildings readily accessible for all classes of patients.

6. The following additions have been made in the industrial departments as diversional occupations:

The laying out of a golf course for the use of patients under instructors.

Class in clay modeling.

7. Consulting staff from the City of Elgin has been named and come out for consultation where the resident physician desires an opinion in obscure cases.

8. The following buildings have been erected recently:

New psychopathic building for men.

Nurses' home.

Green house.

The following buildings are under construction:

Boiler house.

Dining-room for acute service.

Extension of north and south dining-room of the main building.

Ward for chronic female patients.

—*Kankakee State Hospital, Kankakee.*—During the fall all of the patients and employees of this hospital, numbering about 4000, were inoculated against typhoid fever.

INDIANA.—*Indiana Village for Epileptics, Newcastle.*—Two buildings for men are about ready to be opened. An appropriation is available for the construction of buildings for women, but it will probably be a year before these can be completed.

IOWA.—*State Hospital and Colony for Epileptics, "The Meadows," Woodward.*—This institution is under construction. The buildings, to be completed by September 1, are the following: Power house, service building, laundry, superintendent's residence and the hospital group, consisting of 10 pavilions connected by corridors. The hospital group comprises the following pavilions: Two receiving pavilions, clinical and laboratory building, two general hospitals, two isolation pavilions, one operating pavilion, one hydro- and electro-therapeutic pavilion, and the kitchen and dining-room building. It is not anticipated that the institution will be ready to care for patients until early next year.

MARYLAND.—*Crownsville State Hospital, Crownsville.*—Practically all the negro insane in the state have been transferred to this hospital, the removal of 200 from Bay View Hospital during the fall completing the transfer which has been going on since this hospital was opened.

—*Sheppard and Enoch Pratt Hospital, Towson.*—A meeting of the Interstate Psychiatric Society was held November 23, 1915, at this hospital. A constitution was adopted and the following officers were elected: President, Dr. Henry A. Cotton; Vice-President, Dr. Edward N. Brush; Secretary,

Dr. Samuel T. Orton. Dr. Llewellys F. Barker addressed the society on Medicine in Psychiatry.

All bathroom units are being remade, the walls having a six-foot white marble wainscoting, the ceiling and frieze being of white enamel. The floor is of white vitrified tile and the partitions of white marble. New and modern fittings are being used, and the whole presents a very attractive appearance. Two new private bathrooms have also been installed.

During the past winter the electroliers on a number of wards have been replaced by the semi-indirect lighting system.

Since November a course of lectures on English literature has been given by a convalescent lady patient, formerly a teacher. Though originally intended as a culture course for the nurses, patients were allowed to attend, have become much interested, and form a majority of the audiences. The course has been admirably given and correlates history, music, and art with literature, and probably for this reason has proved so interesting. It has done much to stimulate an interest in reading, and the services of a number of musically inclined patients have also been enlisted to sing or play at the lectures. Others have been interested in doing some research on folk dancing, morris dancing, the music of Shakespeare's plays, Elizabethan love songs, mediæval costumes, Christmas customs, etc. A decided stimulus has been given to occupations which lead to mental improvement and at present tentative plans are being considered for a small celebration of the Shakespeare Tercentenary.

Through the special efforts of a group of patients who are interested in botany, practically all of the shrubs and trees on the hospital grounds have been labelled. A number of duplicates are allowed to remain unlabelled in order that future students may find some material to differentiate. The labels were printed at the hospital shop and, in order to make them better resistant to the weather, have been coated with paraffin. It is expected that in time these labels will be replaced with copper or zinc labels which will be made in the metal shop.

The usual occupations continue to be carried on actively, and the various classes are at present preparing for the semi-annual bazaar which will be held in May.

An active season is being planned for the baseball team and the diamond is being rolled and placed in good condition for the opening game.

MASSACHUSETTS.—*Monson State Hospital, Palmer.*—A 20 years' review of the work of this hospital is planned to be held in May. Each member of the staff will contribute, the clinical and laboratory work in progress will be reviewed, and an effort will be made to gather all those together who have contributed largely to the success of the institution.

MICHIGAN.—*Pontiac State Hospital, Pontiac.*—Dr. Udo J. Wile, of the University of Michigan made report in *The Journal of Experimental Medicine*, Vol. 23, 1916, of the successful implantation of spirochetes and

the transmission of experimental syphilis to rabbits from the living paretic brain. Material for the inoculation of the rabbits was obtained by aspirating cortical substance from eight living paretics from the Pontiac State Hospital in June last. Dr. Wile now reports that this experimental syphilis has been transmitted through five generations of rabbits.

A cold storage building, 60 x 43 feet, equipped with an ammonia refrigerating apparatus has recently been placed in commission. The building contains 10 cold storage rooms, in addition to a meat cutting room. In addition to the above, refrigeration is supplied to three other rooms adjacent to the kitchen.

The boilers at the power plant have been equipped with automatic stokers. These stokers will be fed from overhead coal bunkers, which in turn are supplied with coal by a conveyor of bucket-elevator type. A coal crusher completes the equipment.

A steam ash conveyor carries the ashes from each pit to a bin outside the boiler house, from which they are dropped into a dump wagon.

MISSISSIPPI.—A movement has been started toward the establishment of a state vocational institution for the care of feeble-minded.

NEW JERSEY.—*New Jersey State Hospital at Morris Plains.*—The new form of refectory has proven very successful and another dining-room will be constructed in the dormitory building after the same plan.

Three hypochlorite purification stations have been completed and will sterilize all the water used in the institution.

A two-story and basement extension to the industrial building has been nearly completed. The industrial building was opened October, 1914, and was equipped with apparatus and supplies for manufacturing a great many utilities. In equipping this building, special attention was given to the introduction of equipment that could be utilized in restoring the former skill of patients who have been afflicted with mental diseases that impaired their original capabilities and disorganized their normal habits of behavior. This department, which was experimental at first, has turned out to be one of the most efficacious methods of treating a large number of patients having chronic mental diseases.

On the first floor of this building is located a well-equipped print-shop and bookbindery. In the bookbindery is a modern duplex ruling machine which requires exceptional skill for operation, and has been operated by the patients successfully.

On the second floor of this building various kinds of looms have been installed for weaving rag rugs, toweling, and tapestries. Several knitting machines for the manufacture of stockings are available for the patient's use.

The willow industry has several subdivisions and can be used advantageously in grading the work which the patients are capable of doing until each patient acquires sufficient skill to perform the more complex work of this industry.

Special attention has been given to out-door amusements for the patients. During the baseball season the hospital team will play a complete schedule of games with teams from various parts of this state. A large bandstand has been constructed on the baseball grounds and every day that the team plays the band gives a concert.

In the men's department of the main building a room devoted exclusively to the giving of continuous baths has been equipped. There are six tubs, under the control of a Leonard mixing valve. These baths are in constant use and have proven very satisfactory in the treatment of excited, violent, and destructive patients.

Two additional tubs have been installed in the continuous bathroom in the women's department.

A competitive examination will be held in May to fill three vacancies in the staff.

NEW YORK.—Under the auspices of the Mental Hygiene Committee of the State Charities Aid Association, a series of lectures is being given as part of a state-wide educational movement for the prevention of insanity. Among those giving these lectures are Drs. Stewart Paton, Smith Ely Jellyffe, August Hoch, William Mabon, James V. May, and others.

The New York Police Department has established a laboratory for the purpose of examining prisoners to ascertain if they are defective. It is located at police headquarters and is in charge of Dr. Louis Bisch.

The New York City Child's Hospital and Schools on Randall's Island has received an appropriation of $600,000, which will be used to rebuild and thoroughly modernize this institution.

The eighth annual meeting of the National Committee for Mental Hygiene was held in New York City, February 2, 1916, at which it was announced that the Rockefeller Foundation had donated $22,800 for the purpose of carrying on surveys in 16 different states upon the care of the insane. Surveys have been, or are being made in South Carolina, Texas, California, Tennessee, Missouri, Illinois, Indiana, North Dakota, and the District of Columbia.

The aldermanic finance committee of Buffalo has been petitioned for an appropriation of $2000 to establish a psychopathic ward at the Buffalo Municipal Hospital.

—*Binghamton State Hospital, Binghamton.*—The new building for 300 women patients and the employees necessary to care for them, to which reference was made in the last Half-Yearly Summary, is now practically completed; it will be furnished during the coming spring and occupied in the early summer.

At the power plant a new boiler of 500 horse-power capacity was put in commission in January, and proposals are now in the hands of the State Hospital Commission for another boiler of similar size, and other improvements at the plant which will aggregate in cost $30,000. Besides these

improvements, funds are available for a new coal trestle which it is expected will be erected during the coming summer.

Repairs are now being made to the general assembly hall to strengthen the rear wall which, on account of the settling of the foundation, has been regarded as unsafe for some time past. General repairs have been made to the heating system throughout the institution, and renewals of more or less importance have been made in practically every department of the hospital.

On the 9th of October, 1915, a small building used as a storehouse on the hospital farm, was destroyed by fire. The value of the building and its contents was approximately $500.

A transfer of 50 women and 25 men patients was received on October 13, 1915, from the Manhattan State Hospital in New York City, to relieve the crowded condition of the wards of that institution.

In February, 1916, Mr. Merritt J. Corbett, whose term as a manager had expired December 31, 1915, was reappointed by Governor Whitman for another term of seven years. Mr. Corbett has been a member of the Board of Managers of this hospital for the past eight years, and during the past two years has been its President.

On October 25, 1915, Miss Edith Atkin, R. N., was appointed from the Civil Service eligible list to the position of principal of the training school for nurses, to succeed Miss Laura A. Beecroft, who had temporarily filled the position from February 3, 1915, until August 3, 1915, when she resigned.

December 1, 1915, Miss Hilda P. Brodhead, a graduate of this hospital, was appointed social worker in connection with the after-care work which has been a feature of this hospital for several years past, and is now devoting her entire time to this field of activity.

—*Buffalo State Hospital, Buffalo.*—Authority for the expenditure of necessary salary having at last been obtained from the State Hospital Commission, with the approval of the Governor, an after-care agent and social worker has been appointed for this hospital. The assistance, not only in visiting patients on parole, but in investigating cases and families who come under the cognizance of the hospital in its clinic work, is very marked. It is hoped that with the thorough establishment of the health center system or zone system in this city by the Health Department, that mental hygiene work can be so incorporated with the work of the different health officers that much more thorough and effective work in mental hygiene can be done.

The percentage of crowding beyond capacity at this hospital amounts to about 26 per cent. Earnest efforts are being made to induce the legislature to provide some relief, without which the work of the state hospitals in securing recoveries must certainly be much impaired.

—*Gowanda State Homeopathic Hospital, Gowanda.*—Material was purchased and work commenced on a 24 x 90 foot addition to the carpenter shop. This building when completed will provide the necessary room for the storage of lumber, a small varnish room for the painter, a room for the

fire department to keep hook and ladder trucks and hose carts (the present cement-block fire house is to be taken down during the summer and the material used to construct a milk house at the dairy barn), and the basement will be used by the mason to manufacture cement blocks, cement tile and to store his tools and supplies.

The legislature of 1915 appropriated $10,000 for the construction of a mortuary and laboratory. The State Architect is completing plans for this building, which will be constructed during the year.

A small pavilion for women tuberculous patients was completed and occupied during the year. This building has a dormitory for 20 patients, a small dining-room, serving room and a wing containing a linen room and toilet room. It was erected at a cost of $1760.

The upper half of the power house stack was removed and a new steel stack put in place.

A heat conduit was installed, connecting the residence of the superintendent and the staff house with the power house.

Three thousand and sixty feet of sewer line were installed, connecting the farm cottage with the main sewer.

A new 10 horse-power boiler has been installed at the milk house.

A "Natico" tile silo of 300 tons capacity, 18 x 48 feet, was completed and filled with ensilage this last fall.

New stalls, of the James Way type, were installed at the dairy barn.

The quarantine cottage, farm house, carriage barn and piggery have been reshingled, and many of the buildings have been repainted.

Much painting has been done on the wards, where oil paints have replaced water paints.

Extensive additions to the bakery, permitting more space, were completed during the winter. Three new sanitary bread racks and a cake mixer were installed in the bakery, thus lightening the work of the baker.

A "National" canning outfit was purchased during the year and operated very successfully during the canning season.

The hospital has earned quite a reputation for its registered Holstein stock and has supplied several of the state hospitals with registered bulls and calves, Kings Park, Middletown and Willard having profited thereby.

Out-patient departments have been opened in Welcome Hall Dispensary, Buffalo, N. Y., and in the W. C. A. Hospital at Jamestown, N. Y. These dispensaries are visited by an assistant physician one day a month. During the coming year the hospital expects to open dispensaries in the cities of Salamanca and Olean.

—*Hudson River State Hospital, Poughkeepsie.*—For a number of years the hospital has had a small but efficient local Committee of Mental Hygiene, and during the past few months efforts have been made to enlarge the scope of this work, and to that end a much larger and more influential committee has been organized with Frank B. Lown, Esq., as Chairman. Mr. Lown has an active interest in public health matters, and

his long service as a member of the Board of Managers of this hospital eminently qualifies him for this important work.

Miss Nellie A. Doughty, R. N., has been appointed as Field Worker for the hospital and has had immediate charge of the Out-Patient Department and Social Work in the district.

During the winter cottages three and six, located in the eastern part of the hospital property, were entirely renovated.

The smoking and billiard room attached to the main building has had new steel ceilings, and has been repainted and generally improved.

Owing to difficulty with the foundation of the bowling alley built several years ago, it was necessary to renew the entire alley. Advantage was taken of the opportunity to increase the length to standard, and the new alleys will shortly be installed.

—*Kings Park State Hospital, Kings Park, Long Island.*—A new system of central hot water heating has been completed and is proving satisfactory.

A contract was recently let for drilling two wells, connecting these wells up in a permanent manner with the existing cistern, and also connecting in one other well. With the completion of these two wells the hospital will have 10 wells, each with a depth of approximately 500 feet. The water so far secured from the eight wells, which are now in use, is of very good quality.

There was $80,000 appropriated by the legislature, mentioned in the hospital news of last year, for additional accommodations for patients. When bids were received this amount was found insufficient, and another appropriation of $10,000 was made, or a total of $90,000.

Contracts were let for building additions to cottages one, three and four, the floor space of each floor amounted to 4060 square feet. The additions are two stories high, with basement. The basement is to have a tile floor and be equipped for dining-rooms.

Certificates were received from the American Medico-Psychological Association at Old Point Comfort in May for the following:

1. Certificate for the best braided rag rugs.
2. Certificate for best specimen of drawings.
3. Certificate for best specimen of stenciling.

In addition to the usual departmental shops, there are classes in embroidery, needle work, basketry, rug-making, stenciling, satin and paper flower work, brass work, pyrographing, etc. Lately new classes have been formed in leather work. Diversional classes are also continued and many patients enjoy daily recreation in the form of bowling, dancing, basketball, drills, calisthenic exercises, and, during the season, for the men, baseball and quoits.

Miss Lillian Reilly, a graduate of Pratt Institute, Brooklyn, has been employed to take charge of a class for women in basketry, and leather tooling for both women and men patients.

Miss Mary M. Maupin, a graduate of the Thomas Normal Training School, Detroit, Mich., has been employed to take the school for women

patients, to fill the vacancy caused by the resignation of Miss Alba M. Evans, who had the school for a number of years. Miss Maupin also conducts two classes, one for men and one for women, in calisthenics and other physical exercise.

Forty-one escapes of patients are recorded as having occurred during the year. Of these, 22 were returned prior to the expiration of 30 days; five were paroled to the custody of relatives or friends and discharged after 30 days; one patient, unfortunately, committed suicide within a few days after reaching home. Ten were discharged to the custody of themselves, not having been heard from again. Fortunately, none of the latter were considered dangerous to themselves or others. The remainder will be discharged if not returned within the 30-day period.

Two patients, while in the hospital, committed suicide.

One of the employees, Karl Weiser, at considerable risk to himself, rescued a patient from the old canal.

Several employees during the performance of duty suffered accidental injuries, none of which, fortunately, were of a serious nature.

On August 7, 1915, a fire occurred in the tailor shop. This fire started in a box in the rear of the shop where condemned clothing and waste pieces from making up new clothes are kept. The fire probably was the result of spontaneous combustion or caused by a patient, who was smoking, dropping sparks into the box. The fire burned through the clapboards of the building and then ran up between the clapboards and wainscoting and in this manner gained considerable headway before it was detected. The fire department responded promptly to the alarm of fire, and the total damage to the building and institutional clothing was approximately $300.

A clinic was established jointly with the Long Island State Hospital at the Williamsburgh Hospital, Brooklyn, every Saturday, between the hours of 10 and 12. The superintendents, or one of their assistants, will be in charge. The State Charities Aid Association has been of great assistance in aiding the organization of this clinic and also in giving publicity to the same. Special effort will be made to impress upon the public the importance of bringing persons threatened with insanity to the clinic for observation and treatment. The clinic will also be used in conjunction with the New York office as a place where paroled patients will report at stated intervals. The research assistant will also attend the clinic and act in a social service capacity.

Writs of habeas corpus were issued by various courts with respect to the following patients:

On July 30, 1915, E. S., Identification No. 82975, was produced in court, and the court left the matter of the patient's discharge to the judgment of the superintendent. Later the patient was granted a six months' parole.

On October 5, 1915, J. L., Identification No. 85371, was produced in court and was discharged to the custody of self.

On December 28, 1915, C. W. R., Identification No. 74749, was produced in court and discharged on bond to the custody of his attorney.

—*Manhattan State Hospital, Wards Island.*—No special work has been carried on during the past six months except on the construction of the building, Female Division, for 200 patients, and the building, Male Division, for 150 patients. The winter weather has somewhat interfered with the progress on these buildings. The other work connected with the hospital has been more of a routine nature, such as repairs, etc. Since the last summary was submitted the new nurses' home has been furnished and occupied.

During the winter, work on the foundation of a new power house to take the place of the other two power houses (one in the Female Division and the other in the Male Division) has been going on. Considerable material has been delivered, but the work is not far advanced as yet.

—*Mohansic State Hospital, Mohansic.*—After considerable investigation and agitation it was determined that the disposal of sewage from this hospital would contaminate the water supply of New York City, as the hospital is situated on the Croton watershed. A bill authorizing the disposal of the hospital and the utilization of the proceeds for the establishment of a hospital elsewhere was introduced before the legislature. Later there was some disagreement as to whether the City of New York should not reimburse the state for the money which had already been spent upon the property. Meantime the necessity for a new hospital becomes stronger and each state hospital is overcrowded.

—*Rochester State Hospital, Rochester.*—On December 1, 1915, a room was set apart for the exhibition and sale of the work of the Dementia Præcox School.

—*St. Lawrence State Hospital, Ogdensburg.*—A movement for the establishment of mental dispensaries throughout the hospital district, in cooperation with the State Charities Aid Association, has been begun. The plan is to locate these dispensaries in the larger communities throughout the district. Thus far two clinics have been opened, one at Malone, N. Y., the other at Watertown, N. Y. If the number of patients who applied for consultation is any criterion as to the necessity of this work the need was fully demonstrated. Two hundred and twenty-four thus far, in three sessions of the clinic, have been interviewed.

—*Willard State Hospital, Willard.*—The Committee on Mental Hygiene and After Care, consisting of 14 members, all resident in the hospital district, which was established in 1907, held its annual meeting at the hospital October 8, at which reports were made by individual members concerning the work they had done in connection with the cases paroled or discharged from the hospital. The object of this committee is to educate, as far as possible, in regard to the causes of mental disease; to devise and inaugurate preventive measures in the hospital district; to provide temporary assistance and employment when necessary, and friendly aid and counsel

for all patients paroled or discharged from the hospital. The work is of the nature of personal service. Experience has shown that such service is agreeably accepted and appreciated by all classes of patients, and it is extremely rare that anyone shows a tendency to resent the kindly interest of the members of this committee. The committee also acts as a medium of communication between the public and the hospital which tends to inspire confidence in the management of institutions of this character and lessen the prejudice and ignorance which have always existed to a greater or less extent. Members of the committee are at full liberty to visit the hospital at any time and meet the patients from their district, and also to familiarize themselves with methods of management and treatment. The total number of patients referred to the committee during the year ending September 30, 1915, was 89, which represents nearly all of those paroled or discharged. It is the practice to parole to their relatives and friends as many patients as possible, whether recovered or not, when further residence at the hospital is not likely to be of benefit to them and their condition is such that it will not be inimical to the welfare of the community outside. Consequently many leave the hospital whose disorder is of a chronic nature, and in some instances it is found that improvement takes place after they return to their homes. The average daily number on parole was 31 men and 35 women. Since October 1, 25 men and 7 women, paroled or discharged from the hospital, were reported to the committee.

Two concrete ice houses were constructed during November and December. A large cow stable at the Grange, which houses 76 head of cattle, has been raised 18 inches and put on a new concrete foundation and equipped with new concrete floors, metal stanchions and individual drinking basins. The interior has also been ceiled throughout, all of which has produced a marked improvement in the sanitary conditions.

All the wards in the group of cottages known as "Sunnycroft" have been repaired and painted during the winter.

—*The Craig Colony for Epileptics, Sonyea.*—Recently the ironing department of the colony laundry has been equipped with an entire electrically-driven and steam-heated ironing equipment, thus putting the colony in a position to handle a greatly increased amount of employees' and patients' clothing in this department. Two tumbler driers have been added to the drying equipment, as also three electrically-driven washing machines.

The Letchworth House, an old four-story Shaker Dormitory, which was remodeled in part at the time the colony was established, has had removed from the three upper floors all patients and the space thus vacated is occupied by employees. Thirty patients reside on the first floor of this old building. For several years past funds have been requested to erect elsewhere at the colony dormitories to provide the space needed by the change above referred to.

On February 1, 1916, the colony post office was discontinued by the United States Postal Department, thus necessitating the colony sending to

Mt. Morris, three and one-half miles distant, for all mail matter. The United States Postal Department refused to consider the post office at the colony as an institutional post office, although there were but three families, one of these being that of the Pennsylvania Railroad Station Agent residing at the colony, who received mail through this post office in addition to the mail received by the employees and patients at the colony, the latter number exceeding 1800.

Graduating exercises of the Colony Training School for Nurses were held in the assembly hall at the colony on September 19, 1915, at which time eight were graduated.

A committee of the State Senate has submitted a report covering the matter of readjustment of salaries in the various departments in institutions. They propose to make the effort to have the state give like compensation for like services. The colony, as some other institutions, has long been discriminated against in this direction as compared with the state hospitals for the insane.

A new X-ray equipment, installed by Waite and Bartlett, of New York City, has been placed in the colony hospital at a cost of $1850.

By certain alterations made in the infirmary for male patients a sick ward accommodating 20 patients has been made ready for use on the ground floor, adjoining which room is being installed a tub for the giving of continuous baths.

The new barn erected during the past year in the west group of the colony is now in use. A request has been made during recent years for an appropriation to erect certain other structures, such as dormitories, etc., in this group so as to make the same a subfarm colony.

Folk dancing and work in crafts is being developed among many of the patients residing in the infirmary for females; similar work being also inaugurated but less advanced in the infirmary for males.

North Carolina.—*State Hospital, Dix Hill, Raleigh.*—There is under construction a new psychopathic ward, which will be equipped with all the modern hydrotherapeutic appliances. In this building will be an outpatient department planned for the class of nervous and mental cases that can be benefited in this department. A new operating room has been constructed on modern lines.

The training school for nurses has been reorganized and placed under the direction of a graduate nurse. The pupils will spend their intermediate year at Bellevue Hospital with which this hospital has affiliated. The pupils by this method will return to us for their last year and in this way the efficiency of the nursing force will be increased and at the same time the pupils will have a more liberal allowance than they would receive at a general hospital. A new nurses' home is being erected.

A new mending room has been constructed, so that the sewing room is able to devote its entire energy to the manufacture of materials.

During the year a new industrial building is expected to be constructed.

A number of clubs for patients have been organized on the wards, such as sewing circles, card clubs, and musical and literary circles. Reading circles for all patients are weekly conducted on the various wards under the supervision of capable nurses. It is felt that the patients are showing a great deal of improvement since their inauguration, and the patients are beginning to take a great deal of pride in their membership. In this way a number of patients are employed who at one time would never willingly leave the wards.

The pathologist, Dr. Pendleton, has made complete laboratory examinations on all new admissions and other patients who required such examinations. The admissions during the past year number something over 300 patients. The laboratory examinations include Wassermann and Noguchi. The paretics have been receiving the intra-spinal mercurialized serum treatment and in many cases show great improvement.

OHIO.—*Columbus State Hospital, Columbus.*—This hospital is erecting a power house at the present time which is expected to cost about $106,000. When completed it will be one of the best equipped power houses of any institution of the country.

An appropriation of $40,000 is to be expended this season in the erection of a $70,000 cottage, the other $30,000 being available the coming season.

—*Lima State Hospital, Lima.*—The Lima State Hospital for the criminal insane was authorized by an act of the Ohio legislature in 1904. A building commission was appointed in 1908, and immediately selected Frank L. Packard, of Columbus, as architect. After visiting all of the hospitals for criminal insane in the United States, plans and specifications were drawn up embodying all the good points of the institutions visited and inspected, together with original ideas on the subject, and immediately commenced construction, which continued uninterruptedly from that date until April, 1915, when the work was virtually completed and the hospital opened for the reception of patients.

The hospital is designed to care for the following classes of insane persons, as specified by law:

1. Persons who have become insane while in the Ohio State Reformatory or the Ohio Penitentiary.
2. Dangerous insane persons in other state hospitals.
3. Persons accused of crime but not indicted because of insanity.
4. Persons indicted but found to be insane.
5. Persons acquitted because of insanity.
6. Persons adjudged to be insane, who were previously convicted of crime.
7. Such other persons as may be directed by law.

Dr. Charles H. Clark, Superintendent of the Cleveland State Hospital, was appointed superintendent on September 15, 1914, and the hospital was completed under his direction and made ready for the reception of patients.

The medical staff at present consists of two assistants, Dr. John H. Berry, formerly first assistant at Longview Hospital, Cincinnati, O., first assistant, and Dr. Wilhelm H. Vorbau, formerly second assistant at the Athens State Hospital, second assistant. A third assistant will be added when the population of the hospital requires the addition.

The normal capacity of the hospital is 1000, but this could be increased should necessity demand it. The present population is 680, consisting of patients transferred from all the other state hospitals, including 76 insane from the Ohio Penitentiary.

The hospital is equipped with a pathological laboratory for work on modern lines. The surgical department, including operating room, anæsthetic room, electric sterilizing apparatus, etc., is fully up to date in all respects.

During the coming summer the superintendent's residence will be erected at a cost of about $15,000. Also, the dairy barn with a capacity of 50 cows. The piggery will be of concrete and will be started as soon as the weather permits.

In addition, there is much work to be done in beautifying the grounds and surroundings. Patients' labor will be utilized in this work as well as in cultivating the 610-acre farm surrounding the institution. The number of patients who are able to work and who will be benefited by it has so far exceeded expectations, considering the character of cases in the hospital.

The Lima State Hospital is unique in many respects, and when the finishing touches have been completed will be on a par with any in the United States.

—*Massillon State Hospital, Massillon.*—This hospital suffered from a fire which completely destroyed the laundry building on the night of February 19, 1916. The fire probably originated in the dry room, but was under such headway when discovered that its origin cannot be definitely ascertained. The hospital fire department gave prompt response, and several streams of water were turned upon the fire within five minutes after the alarm. The city fire department was on hand within 15 or 20 minutes, and with the two departments working under the direction of Fire Chief Burkle, of the city department, the adjoining buildings were saved, although the boiler house was on fire no less than five times. In addition to the loss of the building, which included the sewing room, the marking room, mending room and distributing room, there were large quantities of patients' clothing, trunks, valises, etc. The total loss will probably reach $100,000. Arrangements are already under way to rebuild. Plans have been prepared and an estimate of cost submitted to the emergency board. Temporary quarters have been prepared, and through the generosity of the American Laundry Machinery Co., enough machinery has been installed to take care of the work partially.

A new cottage for patients will be constructed the coming summer.

—*Cincinnati Sanitarium, Cincinnati.*—A new building, known as Rest Cottage, has been provided for the treatment of non-mental patients requiring treatment for nervous and nutritional disorders.

A wire fence on concrete posts has been placed about three sides of the grounds of 30 acres, or about 1700 yards. The fourth side, which fronts on Hamilton Avenue, is marked by a privet hedge, which is more in harmony with the suburban tone of the neighborhood.

A hennery for 1000 birds is expected to solve the "fresh egg problem."

PENNSYLVANIA.—*State Hospital for the Insane, Danville.*—During the early fall there was quite an extensive epidemic of typhoid fever at this hospital, there being 115 cases among patients and employees.

—*State Hospital for the Insane, Norristown.*—An outbreak of typhoid fever occurred at this hospital during September. There were over a dozen cases in all. The water supply is from artesian wells and the milk supply was apparently not the source.

—*Blair County Hospital for the Insane, Hollidaysburg.*—During the past summer the patients (under the charge of skilled attendants) erected a concrete post and iron tube fence along the public highway, in front of the institution. Square hollow concrete blocks and caps with a 10-inch ball over all for each post were made in the Concrete Shop. A hole 15 inches square by 3 feet 9 inches deep for the foundation of each post was made and a 1-2-4 mixture of cement, sand and stone used for foundation. As the block was laid, two 2-inch condemned locomotive boiler tubes were placed in appropriate position. The boiler tubes were coated with a special "non-rusting" compound and paint. The result is a handsome, durable and inexpensive fence.

The concrete piggery, 148 feet by 36 feet, was completed early in 1915. An institution piggery should always be designed to embrace the following cardinal principles:

1. Health and sanitation of its inhabitants.
2. To obtain the greatest return possible for the investment.
3. To reduce maintenance cost to lowest possible limit.

For the benefit of others who may possibly not have had a large and varied experience with piggeries and diseases of hogs, the following practical points in design are given:

An exclusively concrete floor in a piggery always results in rheumatism in a large proportion of hogs, even though a deep bed of straw may be provided. This may be obviated in one of two ways: by providing wood palates with an air space between the concrete and the wood, or by providing a "den" with no concrete on bottom—simply using dirt or sand for a floor. The feeding pen with unprotected concrete floor is no injury when "sleeping dens" are provided with plenty of litter for the hogs. It is remarkable how cleanly the hogs appear if thus provided.

Practically perfect sanitation can be obtained in an exclusively concrete piggery—with wood palates on the floor of the sleeping dens—by the use of hose, disinfectants and whitewash at frequent intervals.

Overhead and side drafts can be guarded against by hinging windows from bottom and providing a shield on each side of the window.

With ordinary care and especially when new stock is bought, care being taken not to introduce the animals into the herd or even near to the piggery until such animals have had frequent baths, together with at least one good scrubbing, using an antiseptic—the nightmare of hog cholera will be practically eliminated, provided the piggery is built on new ground where no hog manure had been spread.

A sanitary, well-cared for piggery is a never failing source of revenue, by reducing the meat bills of the fortunate institution; on the contrary an unsanitary piggery with recurring hog cholera is an added expense to the maintenance fund.

During the past year stocking and sock making have been added to the Industrial Department, and this year it is expected to add brush and broom making. With these additions the shops will be complete, there now being carpenter, plumbing, tin, blacksmith, rug and mattress shops for the men patients.

During the coming year it is proposed to build a concrete block wall about the barnyard.

RHODE ISLAND.—*State Hospital for the Insane, Howard.*—A three-story, fire-proof ward building has just been completed. Its purpose is for able-bodied patients of the quiet and orderly class.

SOUTH CAROLINA.—*South Carolina State Hospital for the Insane, Columbia.*—Following the appropriation by the legislature of $150,000 for development and repairs, and the appointment in May, 1915, of Dr. C. Fred Williams as superintendent, plans were prepared for the modernization of the hospital.

In July, the process of remodeling was begun and by the end of December six wards of the white male patients were radically changed in plan and equipped with shower baths and sanitary plumbing facilities. A thoroughly modern large central kitchen has been built and is almost ready for occupancy, under which is located an ice making plant and two large cold storage rooms. A new congregate dining-room for female patients and nurses, designed to accommodate at least 600 has been built adjacent to the kitchen. This will eliminate the numerous small ward dining-rooms and increase the capacity of the white female department.

A modern dairy building to accommodate 100 head of cattle has been built. It is expected that all the milk used by the hospital will be supplied by this dairy.

New laundry machinery has been provided.

Telephones have been installed in every ward and department of the hospital with a central switchboard in the main building.

By remodeling a cottage on the grounds a home for white female nurses has been established.

A printing press has been purchased and many of the blank forms now in use are the product of the "State Hospital Press," largely the work of patients.

Two continuous baths have been placed in the building for disturbed white females.

An increased supply of excellent water has been obtained for State Park, allowing the transfer of some 80 colored men to the Park, relieving the overcrowded conditions at the main hospital. The colored males at State Park have been lodged temporarily in the building once designed for a laundry.

The force of nurses and attendants has been increased, and a white male and white female night supervisor have been appointed.

An experienced pharmacist has been placed in charge of the drug room. This relieves the male supervisors who had formerly attended to the dispensing and allows them to devote their entire time to their respective departments.

The white male nurses have been uniformed in white duck.

Many of the rooms, ward corridors, pantries, dining-rooms, baths and toilet rooms in the female department have been repainted.

A complete reorganization of the administration methods was instituted and each department placed under an experienced and responsible head.

Dr. William C. Sandy, of the Kings Park State Hospital, Kings Park, N. Y., was secured as medical director, and he assumed charge of the Medical Department on June 3, 1915. At the main hospital a complete new staff of physicians was appointed, including three assistant physicians, a pathologist, a woman physician and three internes. Instruction was started in methods of psychiatric examination, classification and the modern system of care and treatment of the insane. Since June 23, 1915, daily staff meetings, except Sundays, have been held at which all new patients are presented, thoroughly discussed as to diagnosis and treatment, and any other matters of importance to the medical work considered.

Special efforts have been made to promote diversional occupation among the patients. By the end of December, over 45 per cent of the patients were interested in some one of the 35 forms of occupation available.

Plans for further extension of improvements call for the removal of most if not all of the negro patients to the State Park; the building of a central power and heating plant; the building of a central dining-room for the white male patients; the remodeling of the wards for white female patients and the remainder of the wards for white males.

It is expected that in the future some provision will be made for a psychopathic hospital, but as yet the efforts will be confined to remodeling the present buildings as stated above.

VIRGINIA.—A law for the sterilization of defectives was introduced at the last legislature but failed to pass.

—*Western State Hospital, Staunton.*—A new building to accommodate 150 male patients will be erected by patient labor, brick being used. It is expected that $20,000 will cover the cost which will be for material.

—*State Epileptic Colony, Madison Heights.*—A new building designed as an infirmary and boys' dormitory has been put into use and somewhat relieves the congestion hitherto existing. The patient population is over 340.

West Virginia.—*Spencer State Hospital, Spencer.*—This institution keeps forging to the front with rapid strides. Last October the training school was put on a firm basis by the employment of a skilled superintendent of nurses, who will have charge of this work. There has been employed an industrial teacher, a skilled dairyman, and a florist and landscape gardener. Four hundred acres of land were rented adjoining the state property, which will be used for farming. There is a large dwelling on this, which will be used as a farm colony. A farm tractor has been purchased to do farming on a large scale. The dairy herd of Holsteins has been doubled; a greenhouse 18 x 40 feet has been erected, and another addition of the same size will be built in the spring. Two hundred Norway maple shade trees, several hundred berry bushes, grape vines and rose bushes have been planted. The congregate dining-room has been enlarged. Tile has been made and a 2-feet sewer line has been laid through the farm for a distance of 500 feet.

The plans have been made and approved for a receiving building (for both sexes) containing 50 beds. This building will be built of brick, with slate roof, by the regular hospital force, and will contain all the facilities found in a modern acute building, among others a complete hydrotherapy outfit.

Canada.—*Protestant Hospital for the Insane, Montreal.*—The Nurses' Home, construction of which was begun in October, 1915, is now roofed in and the work of completing the interior is going on apace. It will be a great boon to the hospital, and it is expected the nursing staff will be able to occupy their new quarters not later than August or September, 1916.

—*Hospital for Insane, Hamilton.*—Owing to the urgent call for men to go overseas great difficulty is being experienced in keeping up the professional staff, as also that of the male employees generally.

Dr. Walter W. McKenzie, Assistant Physician, joined the Canadian Army Medical Corps, and 64 men the ranks, some having been in Flanders since the fall of 1914. The head nurse and three supervisors who are graduates of the training school have also been accepted as Nursing Sisters and will serve in the Psychiatric Department of the Ontario Military Hospital at Orpington, England.

Re-educational work, in the matter of physical culture, basketry, weaving, etc., was commenced in earnest in July, 1915, and Miss Annie C. Wallace,

who after graduating had spent several months in post-graduate work in New York, was placed in charge. Much pleasure and benefit have been derived by the several classes that have been organized, and the display of handiwork at the National Exhibition, Toronto, attracted much attention and many enconiums.

—*Asylum for the Insane, St. John's, Newfoundland.*—This is the only institution in the colony for the treatment of the insane. On January 1, of this year there were 294 patients, 156 women and 138 men.

A large new kitchen and laundry is being fitted up and it is hoped to have it completed by the middle of April.

It is hoped this year to have a new ward on both the male and female side of the institution as the institution is pretty well crowded.

# Appointments, Resignations, Etc.

ABBOTT, DR. E. LOUISE, Assistant Physician at Elgin State Hospital at Elgin, Ill., transferred to Lincoln State School and Colony at Lincoln, Ill.

ADAMS, DR. R. K., Assistant Physician at New Jersey State Village for Epileptics at Skillman, appointed Physician-in-Charge of Male Department at State Hospital at Raleigh, N. C.

ALEXANDER, DR. ROBERT M., First Assistant Physician at State Hospital for Chronic Insane at Wernersville, Pa., resigned to enter private practice in Reading, Pa.

ALLEN, DR. EDWARD B., Assistant Physician at Danvers State Hospital at Hathorne, Mass., appointed Assistant Physician at Boston State Hospital at Boston, Mass.

ARMSTRONG, MISS FLORENCE A., appointed Field-Worker at Gowanda State Hospital at Gowanda, N. Y., October 1, 1915.

ATHERTON, DR. CLESSON C., Assistant Superintendent of Watertown State Hospital at Watertown, Ill., transferred to Jacksonville State Hospital at Jacksonville, Ill. A handsome silver service was presented to Dr. and Mrs. Atherton at a farewell entertainment by the employees.

AUSTIN, DR. ANNE, appointed Woman Physician at State Hospital for the Insane at Columbia, S. C., August 1, 1915.

BAKER, DR. LEONARD A., Assistant Physician at Bridgewater State Hospital at Bridgewater, Mass., resigned to enter private practice in Middleborough, Mass.

BANCROFT, DR. CARROLL ROLLIN, formerly Assistant Superintendent of Montana State Hospital at Warm Springs, died in Los Angeles, Cal., February 3, 1916, aged 36.

BARBER, DR. LEON J., Medical Interne at Willard State Hospital at Willard, N. Y., resigned November 11, 1915, to enter private practice.

BAXTER, DR. MARK W., Superintendent of Ingleside State Hospital at Hastings, Neb., resigned.

BEALL, DR. JOHN R., Medical Interne at Manhattan State Hospital at Wards Island, N. Y., resigned December 31, 1915.

BENSON, DR. HAROLD O., appointed Medical Interne at Kings Park State Hospital at Kings Park, Long Island, N. Y., September 1, 1915.

BLACKBURN, DR. ELLA, Assistant Physician in Charge of Department for Women at Iowa State Hospital for the Insane at Mount Pleasant, resigned October 5, 1915.

BLAKE, DR. JOHN BAPST, Chairman of Trustees of Monson State Hospital at Monson, Mass., resigned.

BLAKE, DR. JOHN G., Trustee of Gardner State Colony at Gardner, Mass., resigned.

BLANKINSHIP, DR. ROY C., appointed Clinical Assistant at Manhattan State Hospital at Wards Island, N. Y., December 22, 1915, and resigned January 11, 1916.

BLEDSOE, DR. EDWIN P., appointed Superintendent of State Hospital for Nervous Diseases at Little Rock, Ark.

BLES, DR. V. A., Assistant Physician at Elgin State Hospital at Elgin, Ill., resigned because of ill health.

BOWDITCH, MR. JOHN P., appointed Trustee of Grafton State Hospital at Worcester, Mass.

BRACKETT, MRS. LUANN L., Trustee of Massachusetts School for Feeble-Minded at Waverley, died October 16, 1915.

BRADY, DR. EMORY J., Assistant Superintendent of Traverse City State Hospital at Traverse City, Mich., appointed Superintendent of a sanitarium in Colorado Springs, Col.

BRODERICK, DR. CHARLES E., appointed Assistant Physician at State Hospital for the Insane at Howard, R. I.

BROWN, MISS RUTH, appointed Social Worker at Wrentham State School at Wrentham, Mass.

BROWNING, DR. WILLIAM JOHN, formerly Assistant Physician at Central State Hospital for Insane at Indianapolis, died at his home February 23, 1916, from the effects of hydrocyanic acid, self-administered, it is believed with suicidal intent, while despondent on account of ill health.

BUELL, DR. BLINN A., Assistant Physician at Binghamton State Hospital at Binghamton, N. Y., resigned to enter private practice July 7, 1915.

BUTTERFIELD, DR. GEORGE K., Assistant Physician at Grafton State Hospital at Worcester, Mass., resigned.

CALDICOTT, DR. FRANCIS S., appointed Assistant Physician at Taunton State Hospital at Taunton, Mass.

CARO, DR. HERMAN, appointed Assistant Physician at Monson State Hospital at Palmer, Mass.

CARSON, DR. HARRY D., appointed Acting Superintendent of Nebraska State Hospital at Norfolk.

CASHMAN, MRS. MARGARET, appointed Trustee of Grafton State Hospital at Worcester, Mass.

CASKIN, MR. FRANCIS H., JR., appointed Trustee of Danvers State Hospital at Hathorne, Mass.

CHAMBERS, DR. RALPH M., appointed Junior Assistant Physician at Westborough State Hospital at Westborough, Mass.

CHAMPLIN, DR. PAUL M., appointed Assistant Physician at Gowanda State Hospital at Gowanda, N. Y.

CHITTENDEN, DR. GEORGE F., formerly Commissioner of Indiana State Hospital for the Insane, died at the residence of his daughter in Anderson, Ind., October 31, 1915, aged 84.

CORNELL, DR. WILLIAM B., Executive Secretary of Maryland Mental Hygiene Society, appointed Medical Director of Children's Hospital and School at Randall's Island, N. Y.

COTTON, DR. JULIA C., Junior Assistant Physician at New Jersey State Hospital at Morris Plains, resigned to take effect May 1, 1916.

CUTLER, MR. ROGER W., appointed Trustee of Grafton State Hospital at Worcester, Mass.

DAVIS, DR. RALEIGH L., appointed Second Assistant Physician at State Hospital for Insane at Austin, Tex.

DAVIS, MR. THOMAS W., Trustee of Massachusetts School for Feeble-Minded at Waverley, died.

DE LA HOYDE, DR. T. GROVER, Assistant Physician at Hudson River State Hospital at Poughkeepsie, N. Y., transferred to Binghamton State Hospital at Binghamton, N. Y., November 15, 1915.

DEWAR, DR. G. F., appointed Acting Superintendent of Falconwood Hospital for the Insane at Charlottetown, Prince Edward Island, during the absence of Dr. Goodwill on active service.

DOHERTY, DR. CHARLES E., Superintendent of New Westminster Hospital for the Insane, British Columbia, is in charge of invalided Canadians returning from the war.

DONAHUE, MR. DAN A., Trustee of Danvers State Hospital at Hathorne, Mass., resigned.

DOYNE, DR. CHARLES R., Assistant Physician at State Hospital for Nervous Diseases at Little Rock, Ark., resigned.

DURGIN, DR. DELMER D., Assistant Physician at Kings Park State Hospital at Kings Park, Long Island, N. Y., transferred to Central Islip State Hospital at Central Islip, Long Island, N. Y., September 1, 1915.

EDMUNDS, DR. MEADE C., Medical Interne at Manhattan State Hospital at Wards Island, N. Y., promoted to Assistant Physician March 23, 1916.

EVANS, DR. BRITTON D., Superintendent of New Jersey State Hospital at Morris Plains, appointed Chairman of a committee to prepare legislation for the better care of the insane.

FARRELL, DR. CHARLES E., appointed Assistant Physician at State Hospital for the Insane at Howard, R. I.

FAST, DR. WILLIAM S., Superintendent of Institute for Feeble-Minded at Beatrice, Neb., appointed Superintendent of Ingleside State Hospital at Hastings, Neb.

FELIX, DR. JOHN C., First Assistant Physician at New Jersey State Hospital at Trenton, resigned October 4, 1915, to enter private practice in Gettysburg, Pa.

FISHER, DR. GERTRUDE G., appointed Interne at Psychopathic Hospital at Boston, Mass.

FITZGERALD, DR. JAMES J., appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., March 27, 1916.

FLAMAND, HON. JOSEPH J. C., appointed Trustee of Medfield State Hospital at Medfield, Mass.

FLINT, DR. AUSTIN, Visiting Physician since 1869, and Consulting Physician and Visiting Physician since 1896 to Insane Pavilion of Bellevue Hospital, died at his home in New York City, September 22, 1915, from cerebral hemorrhage, aged 79.

FOLEY, DR. EDWARD A., Assistant Physician at Jacksonville State Hospital at Jacksonville, Ill., appointed Assistant Superintendent at Watertown State Hospital at Watertown, Ill.

FOURTIN, DR. EDMUND RANDOLPH PEASLEE, formerly Assistant Physician at Foxborough State Hospital at Foxborough, Mass., died suddenly in Waltham, Mass., from heart disease, while making a professional call, aged 49.

FREEMMEL, DR. HARRY J., Assistant Physician at Lincoln State School and Colony at Lincoln, Ill., resigned April 1, 1916, to enter private practice in Chicago.

GAGE, MR. T. HOVEY, Trustee of Worcester State Hospital at Worcester, Mass., resigned.

GARISS, DR. JOSEPH L., Junior Assistant Physician at Government Hospital for the Insane at Washington, D. C., resigned November 30, 1915.

GARVIN, DR. WILLIAM C., Senior Assistant Physician at Manhattan State Hospital at Wards Island, N. Y., appointed First Assistant Physician at Kings Park State Hospital at Kings Park, Long Island, N. Y., July 10, 1915.

GINSBURG, MR. EDWARD E., appointed Trustee of Worcester State Hospital at Worcester, Mass.

GOULD, DR. JAMES C., appointed Junior Assistant Physician at Westborough State Hospital at Westborough, Mass.

GREENE, DR. JAMES L., appointed Superintendent of State Hospital for Nervous Diseases at Little Rock, Ark., a position which he had formerly held.

GREGORY, DR. HUGH S., Medical Interne at St. Lawrence State Hospital at Ogdensburg, N. Y., promoted to Assistant Physician-Pathologist, May 28, 1915.

GRIFFITHS, DR. DANIEL G., Pathologist at Lincoln State Hospital for the Insane at Lincoln, Neb., appointed Superintendent of State Institute for Feeble-Minded at Beatrice, Neb.

GROVER, DR. MILTON M., Assistant Physician at Central Islip State Hospital at Central Islip, Long Island, N. Y., transferred to Kings Park State Hospital at Kings Park, Long Island, N. Y., September 1, 1915.

GUILLET, MR. JOSEPH H., Trustee of Foxborough State Hospital at Foxborough, Mass., term expired.

GUTTERY, DR. WILLIAM D., Superintendent of Nebraska State Hospital at Norfolk, is said to have been permanently suspended.

HAGGERTY, DR. JAMES E., Junior Assistant Physician at Craig Colony at Sonyea, N. Y., resigned to enter private practice in Detroit, Mich., April 1, 1916.

HALL, DR. GEORGE W., appointed Attending Physician at Cook County Psychopathic Hospital at Chicago, Ill.

HEADEN, DR. W. E., Director of Eastern State Hospital at Goldsboro, N. C., resigned on account of ill health.

HENDERSON, DR. ESTELL, appointed Superintendent of Southwestern State Hospital at Marion, Va.

HENRY, MISS MARY C., Trustee of Grafton State Hospital at Worcester, Mass., term expired.

HERRICK, MR. LEANDER F., appointed Trustee of Grafton State Hospital at Worcester, Mass.

HEYM, DR. ALBRECHT, appointed Attending Physician at Cook County Psychopathic Hospital at Chicago, Ill.

HICKLING, DR. D. PERCY, Superintendent of Washington Insane Hospital at Washington, D. C., appointed Chairman of Public Health Committee of the Washington Board of Trade.

HINDE, DR. HUBBARD KAVANAUGH, formerly Superintendent of State Hospital No. 1 at Fulton, Mo., died December 10, 1915, from pneumonia, aged 81.

HOBAN, MR. OWEN A., appointed Trustee of Gardner State Colony at Gardner, Mass.

HORGER, DR. E. L., appointed Pathologist at State Hospital for the Insane at Columbia, S. C., July 19, 1915.

HORNER, DR. HARRIET, Assistant Physician at Westborough State Hospital at Westborough, Mass., resigned.

HUGHES, DR. JOHN J., appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., January 3, 1916.

HUMMER, DR. H. R., Superintendent of Asylum for Insane Indians at Canton, S. D., was elected Vice-President of the Seventh District Medical Society of South Dakota, December, 1915.

HUNT, DR. J. RAMSAY, appointed Manager of Craig Colony for Epileptics at Sonyea, N. Y.

INCH, DR. GEORGE F., Assistant Physician at Kalamazoo State Hospital at Kalamazoo, Mich., promoted to be Assistant Superintendent.

JACKSON, DR. ROY C., Assistant Physician at Worcester State Hospital at Worcester, Mass., resigned.

JAMESON, MR. WILLIAM, appointed Trustee of Monson State Hospital at Palmer, Mass.

KALLOCH, DR. DUDLEY C., appointed Medical Interne at Government Hospital for the Insane at Washington, D. C., December 2, 1915.

KARPAS, DR. MORRIS J., Assistant Physician at Manhattan State Hospital at Wards Island, N. Y., resigned to enter private practice in New York City.

KEATING, DR. FRANK W., Superintendent of Rosewood State Training School at Owings Mills, Md., was recently operated upon for appendicitis.

KIELY, DR. CHARLES E., Medical Interne at Manhattan State Hospital at Wards Island, N. Y., resigned October 31, 1916.

KIMBERLIN, DR. HERBERT C., appointed Assistant Physician at State Hospital No. 2 at St. Joseph, Mo.

KING, DR. GEORGE E., Assistant Physician at Monson State Hospital at Palmer, Mass., resigned to enter private practice.

KING, DR. JOHN C., Superintendent of Southwestern State Hospital at Marion, Va., resigned.

KIRBY, DR. GEORGE H., Clinical Director at Manhattan State Hospital at Wards Island, N. Y., granted six months leave of absence for special psychiatrical work.

KRICKBAUM, DR. WILLIAM H., Assistant Physician at State Hospital for Insane at Danville, Pa., died September 21, 1915, from typhoid fever.

KUH, DR. SIDNEY, appointed Attending Physician at Cook County Psychopathic Hospital at Chicago, Ill.

LADD, MISS CHARLOTTE R. F., appointed Trustee of Grafton State Hospital at Worcester, Mass.

LEAK, DR. R. LEIGHTON, appointed Physician-in-Charge of Syracuse Psychopathic Hospital at Syracuse, N. Y.

LEPINE, MR. MAXIME, appointed Trustee of Foxborough State Hospital at Foxborough, Mass.

LIBBY, DR. MARIAN K., appointed Director of Industrial Therapeutics at Worcester State Hospital at Worcester, Mass.

LIGHTFOOT, DR. WOOTEN D., appointed Fourth Assistant Physician at State Hospital for the Insane at Austin, Tex.

LOCKE, DR. HERSEY G., Physician-in-Charge of Syracuse Psychopathic Hospital at Syracuse, N. Y., resigned.

LUCAS, DR. GEORGE N., Assistant Physician at Elgin State Hospital at Elgin, Ill., appointed Assistant Physician at Wilgus Sanitarium at Rockford, Ill.

MCINTOSH, DR. JENNIE G., Junior Assistant Physician at Worcester State Hospital at Worcester, Mass., promoted to Assistant Physician.

McLean, Dr. Jean, Assistant Physician at Northampton State Hospital at Northampton, Mass., resigned to take a position in the Children's Hospital at Edinburgh, Scotland.

McNeill, Dr. John F., Medical Interne at Willard State Hospital at Willard, N. Y., appointed Assistant Physician at Central Islip State Hospital at Central Islip, N. Y., November 20, 1915.

MacIntyre, Dr. William A., Assistant Physician at Psychopathic Hospital at Boston, Mass., transferred to Grafton State Hospital at Worcester, Mass., August 31, 1915.

Mason, Miss Flora L., appointed Trustee of Westborough State Hospital at Westborough, Mass.

Mason, Dr. William H., appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., January 1, 1916.

Meter, Dr. J. Van, Assistant Superintendent of State Hospital for Inebriates at Knoxville, Iowa, appointed Assistant Physician at Clarinda State Hospital at Clarinda, Iowa.

Miller, Dr. C. J., appointed Interne at State Hospital for the Insane at Columbia, S. C., June 10, 1915.

Miller, Dr. T. N., appointed Third Assistant Physician at State Hospital for the Insane at Austin, Tex.

Mills, Dr. Charles K., Professor of Nervous and Mental Diseases at University of Pennsylvania, resigned.

Munnerlyn, Dr. J. F., appointed Assistant Physician at State Hospital for the Insane at Columbia, S. C., June 22, 1915.

Murdoch, Dr. Cora B., appointed Assistant Physician at Hospital for the Insane at Hamilton, Canada, September 15, 1915, and resigned April 1, 1916.

Murphy, Dr. Patrick, appointed Assistant Physician at State Hospital for Nervous Diseases at Little Rock, Ark.

Mutchler, Dr. H. Raymond, Junior Assistant Physician at New Jersey State Hospital at Morris Plains, resigned to enter private practice April 1, 1916.

Neuffer, Dr. Gottlieb A., appointed a member of the Board of Visitors of State Hospital for Insane at Columbia, S. C.

Noble, Dr. Alfred Ira, Superintendent of Kalamazoo State Hospital at Kalamazoo, Mich., died suddenly in Detroit, January 20, 1916, from gastritis, aged 55.

Nolan, Dr. Leonard S., Assistant Physician at Binghamton State Hospital at Binghamton, N. Y., resigned to enter private practice October 31, 1915.

Noyes, Dr. William, formerly Superintendent of Boston Insane Hospital, died at his home in Jamaica Plains, October 20, 1915, aged 58.

O'Connell, Richard Francis, formerly Superintendent of State Hospital for Epileptics at Gallipolis, Ohio, died at his home in Columbus, Ohio, January 5, 1916, aged 47.

O'Shea, Dr. Peter, appointed Trustee of Grafton State Hospital at Worcester, Mass.

Ostrander, Dr. Herman, Assistant Superintendent at Kalamazoo State Hospital at Kalamazoo, Mich., promoted to Superintendent.

Ott, Dr. Isaac, Consulting Neurologist to State Hospital for Insane at Norristown, Pa., died at his home in Easton, Pa., from pneumonia, aged 68.

Pace, Dr. W. T., appointed Interne at State Hospital for the Insane at Columbia, S. C., June 10, 1915.

Paquin, Dr. J. Ubalde, appointed Trustee of Monson State Hospital at Palmer, Mass.

Parker, Dr. George A., Assistant Physician at State Hospital for the Insane at Howard, R. I., resigned to enter private practice.

Parker, Dr. Ray, Assistant Physician at Philadelphia Hospital for the Insane, appointed First Assistant Physician at State Hospital for Chronic Insane at Wernersville, Pa.

Partridge, Dr. J. C., Assistant Physician at Binghamton State Hospital at Binghamton, N. Y., resigned to enter private practice September 1, 1915.

Perreault, Mr. Henry J., appointed Trustee of Grafton State Hospital at Worcester, Mass.

Raymond, Dr. C. Stanley, appointed Senior Assistant Physician at Massachusetts School for Feeble-Minded at Waverley, Mass.

REED, DR. BEATRICE A., Assistant Physician at Taunton State Hospital at Taunton, Mass., appointed Assistant Physician at Northampton State Hospital at Northampton, Mass.

REYE, DR. HEINRICH A., Pathologist at Pontiac State Hospital at Pontiac, Mich., resigned.

RILEY, DR. WILLIAM J., JR., appointed Assistant Physician at Elgin State Hospital at Elgin, Ill.

ROBERTS, DR. DELPARDE W., Assistant Physician at State Hospital for Nervous Diseases at Little Rock, Ark., resigned.

ROBERTS, DR. HIBBERD R., appointed Assistant Physician at Dannemora State Hospital at Dannemora, N. Y.

ROBINSON, DR. L. F., Assistant Physician at New Jersey State Village for Epileptics at Skillman, appointed Physician-in-Charge of Female Department at State Hospital at Raleigh, N. C.

RORICK, DR. ESTELL H., appointed a member of State Board of Administration of Ohio.

ROWLAND, DR. ROBERT E., appointed Assistant Physician at State Hospital for Nervous Diseases at Little Rock, Ark.

ROYAL, DR. BENJAMIN F., appointed Director of Eastern State Hospital for the Insane at Goldsboro, N. C.

RUSSELL, DR. A. MINNIE, appointed Assistant Physician at Elgin State Hospital at Elgin, Ill.

RUSSELL, DR. FREDERIC J., Senior Assistant Physician at Massachusetts School for Feeble-Minded, appointed Superintendent at Vermont School for Feeble-Minded at Brandon.

SCHEETZ, DR. MILDRED E., Junior Assistant Physician at Government Hospital for the Insane at Washington, D. C., promoted to Assistant Physician October 1, 1915.

SCHWINN, DR. GEORGE HENRY, First Assistant Physician at Government Hospital at Washington, D. C., died February 6, 1916, aged 42.

SHAPIRO, DR. BENJAMIN, appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., November 8, 1915.

SHEPHERD, DR. ARTHUR F., of State Board of Administration of Ohio, term expired.

SHEPHERD, DR. JAMES BENJAMIN, formerly Superintendent of State Hospital for the Insane at Austin, Tex., died at his home in San Antonio, October 11, 1915, aged 81.

SIGHTS, DR. HENRY P., Superintendent of Western State Hospital at Hopkinsville, Ky., resigned.

SKVERSKY, DR. ABRAHAM, Medical Interne at Manhattan State Hospital at Wards Island, N. Y., resigned December 31, 1915.

SMITH, DR. SAMUEL E., Superintendent of Eastern Indiana Hospital for the Insane at Richmond, Ind., is one of the speakers at the National Conference of Charities to be held at Indianapolis, May 10-17, 1916.

SMITH, DR. THERON, appointed Medical Interne at Binghamton State Hospital at Binghamton, N. Y., November 17, 1915.

SMITHSON, DR. WILLIAM W., Superintendent of State Hospital for the Insane at Asylum, Miss., resigned.

SOLOMON, DR. HARRY C., of Psychopathic Hospital at Boston, Mass., resigned, and appointed Investigator of Brain Syphilis with Massachusetts State Board of Insanity.

SPRATLING, DR. WILLIAM PHILIP, formerly Superintendent of Craig Colony at Sonyea, N. Y., died December 22, 1915.

STEARNS, DR. A. WARREN, Assistant to State Board of Insanity of Massachusetts, resigned, and appointed to Out-Patient Department of Psychopathic Hospital at Boston, Mass.

STEWART, MR. FRANK H., appointed Trustee of Massachusetts School for Feeble-Minded at Waverley.

STICK, DR. H. LOUIS, Superintendent of Grafton State Hospital at Worcester, Mass., resigned.

STIMPSON, DR. GEORGE C., appointed Assistant Physician at Elgin State Hospital at Elgin, Ill.

TEALE, MR. CHARLES E., was reappointed Manager of Kings Park State Hospital at Kings Park, Long Island, N. Y., by Governor Whitman, March 12, 1916.

THOMPSON, DR. CHARLES B., Assistant Physician at Henry Phipps Psychiatric Clinic at Baltimore, Md., appointed Executive Secretary of Maryland Mental Hygiene Society.

THOMPSON, DR. WILLIAM J., Assistant Physician at Central Islip State Hospital at Central Islip, N. Y., appointed First Assistant Physician at Danvers State Hospital at Hathorne, Mass.

THORNE, DR. FREDERIC H., Pathologist at New Jersey State Hospital at Morris Plains, resigned to enter private practice.

TRAVIS, DR. JOHN H., Assistant Physician at Danvers State Hospital at Hathorne, Mass., resigned.

TRUITT, DR. RALPH P., Clinical Director at East Louisiana Hospital for the Insane at Jackson, resigned.

TYLER, DR. HOELL, formerly Assistant Physician at New York City Hospital for the Insane at Blackwell's Island, died at his home in Redlands, Cal., August 25, 1915.

VAN COR, DR. CHESTER A., Assistant Physician at Gardner State Colony at Gardner, Mass., resigned.

VAVASOUR, DR. JAMES F., Medical Interne at Manhattan State Hospital at Wards Island, N. Y., promoted to Assistant Physician March 23, 1916.

VETTER, DR. GEORGE V., appointed Medical Interne at Rochester State Hospital at Rochester, N. Y.

VON LEHE, DR. J. C., appointed Interne at State Hospital for the Insane at Columbia, S. C., June 10, 1915.

WAGENHALS, DR. FRANKLIN C., appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., January 1, 1916.

WARREN, DR. L. MAUDE, appointed Assistant Physician at Massachusetts School for Feeble-Minded at Waverley.

WATSON, DR. C. L., Assistant Physician at Central Islip State Hospital at Central Islip, N. Y., transferred to Binghamton State Hospital at Binghamton, N. Y., September 15, 1915.

WEST, DR. C. A., appointed Assistant Physician at State Hospital for the Insane at Columbia, S. C., June 14, 1915.

WHITE, DR. MOSES J., Superintendent of Milwaukee County Hospital for the Insane at Wauwatosa, Wis., for twenty-two years, retired.

WILHITE, DR. JAKE T., Assistant Physician at State Hospital for Insane at Austin, Tex., appointed Physician-in-Chief at Pasteur Institute.

WILLIAMS, MR. FRED. H., Trustee of Medfield State Hospital at Medfield, Mass., resigned.

WILLIAMS, MISS SARAH B., Trustee of Westborough State Hospital at Westborough, Mass., term expired.

WILLIS, DR. ROBERT LUTHER, formerly Superintendent of Eastern Kentucky State Hospital at Lexington, died in his office at Lexington, November 6, 1915, from cerebral hemorrhage.

WOOLSEY, DR. CALVIN L., Assistant Physician at State Hospital No. 2 at St. Joseph, Mo., resigned.

WRIGHT, DR. J. ROBERT, appointed Assistant Superintendent of State Hospital for Inebriates at Knoxville, Iowa.

YOUNG, DR. ALBERT F., appointed Superintendent of Milwaukee County Hospital for the Insane at Wauwatosa, Wis.

YOUNG, DR. FRANK B., Superintendent of State Hospital for Nervous Diseases at Little Rock, Ark., resigned November 31, 1915.

ZWICK, DR. SAMUEL A., Assistant Physician at Massillon State Hospital at Massillon, Ohio, resigned to enter private practice at Akron, Ohio.

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VOL. LXXII No. 1



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THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION



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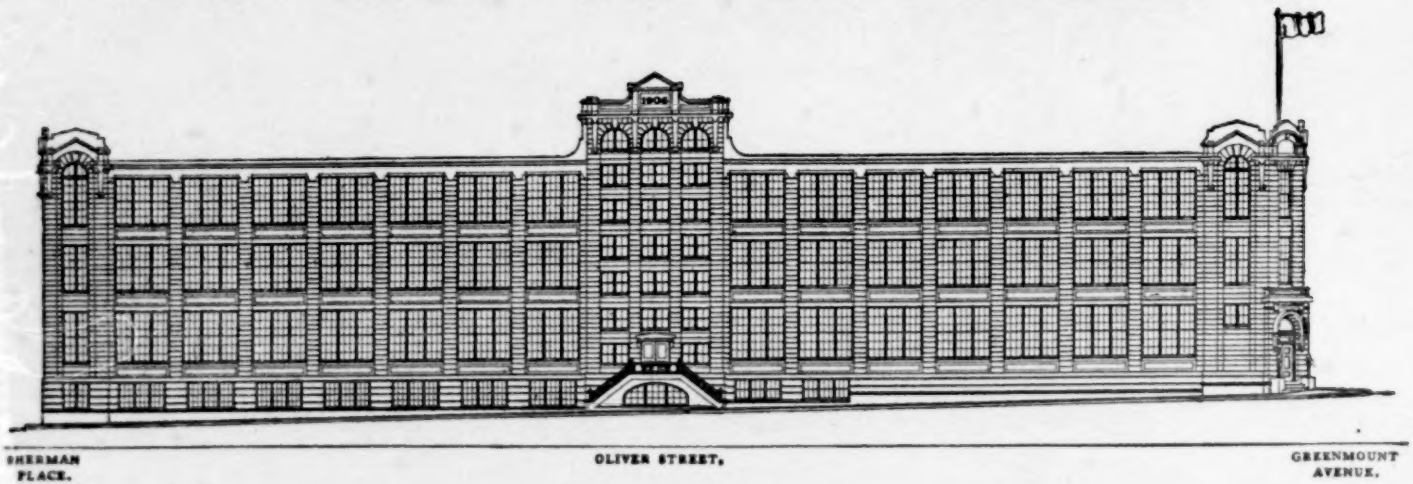


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